

N60087_003861
BRUNSWICK_NAS
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-29732-1, NAS BRUNSWICK ME
07/30/2018
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-29732-1

Job Description: TT: PFAS, Brunswick, Discharge

For:

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Approved for release.
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Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Qualifiers

LCMS

| Qualifier | Qualifier Description |
|-----------|---|
| Q | One or more quality control criteria failed. |
| M | Manual integrated compound. |
| U | Undetected at the Limit of Detection. |
| J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| E | Result exceeded calibration range. |
| D | The reported value is from a dilution. |
| H | Sample was prepped or analyzed beyond the specified holding time |

Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|----------------|---|
| α | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

**Job Narrative
320-29732-1**

Receipt

The samples were received on 7/7/2017 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.4° C.

LCMS

Method(s) 537 (Modified): The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 3535, 537 (Modified): Due to the sporadic recovery performance for the labeled analyte 13C8-FOSA, we are temporarily increasing the reporting limit (RL) for the target analyte FOSA in order to provide better confidence in its reported value. The RL for FOSA has been increased to the same concentration as that fortified into the laboratory control sample (LCS). At this concentration, the LCS demonstrates acceptable FOSA recovery regardless of the recovery of its labeled analog, 13C8-FOSA, which is used to quantitate FOSA. Thus, indicating sufficient analytical performance to support this RL increase. Techniques to improve the recovery performance of 13C8-FOSA are currently underway.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: (LCS 320-174599/2-A) and (LCSD 320-174599/3-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. Reanalysis confirms these results.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPI (320-29732-1), TP-PFC-019-MID-CARBON (320-29732-2), TP-PFC-019-TPE (320-29732-3) and (LCS 320-175097/2-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. Reanalysis confirms the results.

Method(s) 537 (Modified): The laboratory control sample duplicate (LCSD) for preparation batch 320-175074 and analytical batch 320-175951 recovered outside control limits for the following analyte: Perfluorotetradecanoic acid (PFTeA). This analyte was detected in the associated samples. The samples were re-extracted, however, PFTeA in the re-extracted LCSD was also outside of control limits. Due to insufficient sample volume, further re-extraction could not be performed. Results for PFTeA were reported from the re-extraction because the Laboratory Control Sample (LCS) was in control for this analyte.

Method(s) 537 (Modified): The concentration of Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) associated with the following sample exceeded the instrument calibration range: TP-PFC-019-TPI (320-29732-1). These analytes have been qualified; however, the peaks did not saturate the instrument detector. The sample was run at dilution and both sets of data have been reported.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPE-D (320-29732-4). Reanalysis confirmed the result. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. All detection limits are below the lower calibration.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is far below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPE-D (320-29732-4). The sample was re-extracted outside of the recommended preparation holding time. Both sets of data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 3535: Approximately 250 mL of the aqueous portion of the following samples were decanted into a new polyethylene bottle prior to extraction due to the original sample bottle containing an excess amount of sediment which had the potential to clog the solid-phase column: TP-PFC-019-TPI (320-29732-1)

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-175074.

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-175742.

Method(s) 3535: The following sample was re-prepared outside of preparation holding time due to low FOSA IDA recoveries.: TP-PFC-019-TPE-D (320-29732-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-TPI

Lab Sample ID: 320-29732-1

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|--|--------|-----------|-----|------|------|---------|---|----------------|-----------|
| Perfluorobutanoic acid (PFBA) | 77 | M | 2.4 | 0.45 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluoropentanoic acid (PFPeA) | 180 | | 2.4 | 0.96 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorohexanoic acid (PFHxA) | 350 | | 2.4 | 0.77 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 66 | | 2.4 | 0.78 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorooctanoic acid (PFOA) | 1300 | M E | 2.4 | 0.73 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorononanoic acid (PFNA) | 2.3 | J | 2.4 | 0.64 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorodecanoic acid (PFDA) | 1.1 | J | 2.4 | 0.43 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorobutanesulfonic acid (PFBS) | 52 | | 2.4 | 0.90 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) | 350 | | 2.4 | 0.85 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluoroheptanesulfonic Acid (PFHpS) | 9.0 | | 2.4 | 0.70 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorooctanesulfonic acid (PFOS) | 370 | E | 3.9 | 1.2 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorooctane Sulfonamide (FOSA) | 1.1 | J | 39 | 0.62 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorobutanoic acid (PFBA) - DL | 80 | D | 24 | 4.5 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluoropentanoic acid (PFPeA) - DL | 190 | D | 24 | 9.6 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluorohexanoic acid (PFHxA) - DL | 350 | D | 24 | 7.7 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluoroheptanoic acid (PFHpA) - DL | 70 | D | 24 | 7.8 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluorooctanoic acid (PFOA) - DL | 1500 | D M | 24 | 7.3 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluorodecanoic acid (PFDA) - DL | 4.8 | J D | 24 | 4.3 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluorotridecanoic Acid (PFTriA) - DL | 5.6 | J D | 24 | 5.4 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluorobutanesulfonic acid (PFBS) - DL | 55 | D | 24 | 9.0 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) - DL | 360 | D | 24 | 8.5 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluoroheptanesulfonic Acid (PFHpS) - DL | 12 | J D | 24 | 7.0 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluorooctanesulfonic acid (PFOS) - DL | 360 | D | 39 | 12 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluorooctane Sulfonamide (FOSA) - DL | 18 | J D | 390 | 6.2 | ng/L | 10 | | 537 (Modified) | Total/NA |
| Perfluorotetradecanoic acid (PFTeA) - RE | 1.6 | J M Q | 2.4 | 0.39 | ng/L | 1 | | 537 (Modified) | Total/NA |

Client Sample ID: TP-PFC-019-MID-CARBON

Lab Sample ID: 320-29732-2

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|--|--------|-----------|-----|------|------|---------|---|----------------|-----------|
| Perfluorobutanoic acid (PFBA) | 100 | | 2.5 | 0.46 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluoropentanoic acid (PFPeA) | 16 | | 2.5 | 0.99 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorohexanoic acid (PFHxA) | 1.2 | J | 2.5 | 0.78 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorooctane Sulfonamide (FOSA) | 2.5 | J | 40 | 0.64 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorotetradecanoic acid (PFTeA) - RE | 1.4 | J M Q | 2.5 | 0.40 | ng/L | 1 | | 537 (Modified) | Total/NA |

Client Sample ID: TP-PFC-019-TPE

Lab Sample ID: 320-29732-3

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|------------------------------------|--------|-----------|-----|------|------|---------|---|----------------|-----------|
| Perfluorobutanoic acid (PFBA) | 85 | | 2.4 | 0.44 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluoropentanoic acid (PFPeA) | 24 | | 2.4 | 0.95 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorohexanoic acid (PFHxA) | 6.1 | | 2.4 | 0.76 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorooctanoic acid (PFOA) | 0.76 | J M | 2.4 | 0.72 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorooctane Sulfonamide (FOSA) | 2.1 | J | 39 | 0.61 | ng/L | 1 | | 537 (Modified) | Total/NA |

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-TPE (Continued)

Lab Sample ID: 320-29732-3

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|--------|-----------|-----|------|------|---------|---|----------------|-----------|
| Perfluorotetradecanoic acid (PFTeA) - RE | 1.5 | J M Q | 2.5 | 0.39 | ng/L | 1 | | 537 (Modified) | Total/NA |

Client Sample ID: TP-PFC-019-TPE-D

Lab Sample ID: 320-29732-4

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|---------------------------------|--------|-----------|-----|------|------|---------|---|----------------|-----------|
| Perfluorobutanoic acid (PFBA) | 82 | | 2.4 | 0.44 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluoropentanoic acid (PFPeA) | 24 | | 2.4 | 0.96 | ng/L | 1 | | 537 (Modified) | Total/NA |
| Perfluorohexanoic acid (PFHxA) | 6.4 | | 2.4 | 0.76 | ng/L | 1 | | 537 (Modified) | Total/NA |

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-TPI

Lab Sample ID: 320-29732-1

Date Collected: 07/06/17 09:11

Matrix: Water

Date Received: 07/07/17 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------|-----------|-----|------|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | 77 | M | 2.4 | 0.45 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluoropentanoic acid (PFPeA) | 180 | | 2.4 | 0.96 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorohexanoic acid (PFHxA) | 350 | | 2.4 | 0.77 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 66 | | 2.4 | 0.78 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorooctanoic acid (PFOA) | 1300 | M E | 2.4 | 0.73 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorononanoic acid (PFNA) | 2.3 | J | 2.4 | 0.64 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorodecanoic acid (PFDA) | 1.1 | J | 2.4 | 0.43 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.4 | 0.73 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.4 | 0.57 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorotridecanoic Acid (PFTriA) | 2.0 | U | 2.4 | 0.54 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 52 | | 2.4 | 0.90 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 350 | | 2.4 | 0.85 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 9.0 | | 2.4 | 0.70 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | 370 | E | 3.9 | 1.2 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | 2.9 | U | 3.9 | 1.2 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| Perfluorooctane Sulfonamide (FOSA) | 1.1 | J | 39 | 0.62 | ng/L | | 07/20/17 10:13 | 07/23/17 16:16 | 1 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C8 FOSA | 14 | Q | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 13C4 PFBA | 77 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 13C2 PFHxA | 71 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 13C4 PFOA | 67 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 13C5 PFNA | 66 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 13C2 PFDA | 65 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 13C2 PFUnA | 48 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 13C2 PFDoA | 45 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 18O2 PFHxS | 87 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 13C4 PFOS | 83 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 13C4-PFHpA | 93 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |
| 13C5 PFPeA | 80 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:16 | 1 |

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | 80 | D | 24 | 4.5 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluoropentanoic acid (PFPeA) | 190 | D | 24 | 9.6 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluorohexanoic acid (PFHxA) | 350 | D | 24 | 7.7 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluoroheptanoic acid (PFHpA) | 70 | D | 24 | 7.8 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluorooctanoic acid (PFOA) | 1500 | D M | 24 | 7.3 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 6.4 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluorodecanoic acid (PFDA) | 4.8 | J D | 24 | 4.3 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluoroundecanoic acid (PFUnA) | 20 | U | 24 | 7.3 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluorododecanoic acid (PFDoA) | 20 | U | 24 | 5.7 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluorotridecanoic Acid (PFTriA) | 5.6 | J D | 24 | 5.4 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluorobutanesulfonic acid (PFBS) | 55 | D | 24 | 9.0 | ng/L | | 07/20/17 10:13 | 07/24/17 20:07 | 10 |

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-TPI

Lab Sample ID: 320-29732-1

Date Collected: 07/06/17 09:11

Matrix: Water

Date Received: 07/07/17 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL (Continued)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorohexanesulfonic acid (PFHxS) | 360 | D | 24 | 8.5 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 12 | J D | 24 | 7.0 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluorooctanesulfonic acid (PFOS) | 360 | D | 39 | 12 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluorodecanesulfonic acid (PFDS) | 29 | U | 39 | 12 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| Perfluorooctane Sulfonamide (FOSA) | 18 | J D | 390 | 6.2 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:07 | 10 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C8 FOSA | 15 | Q | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 13C4 PFBA | 98 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 13C2 PFHxA | 94 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 13C4 PFOA | 88 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 13C5 PFNA | 77 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 13C2 PFDA | 62 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 13C2 PFUnA | 54 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 13C2 PFDoA | 47 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 18O2 PFHxS | 96 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 13C4 PFOS | 82 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 13C4-PFHpA | 105 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |
| 13C5 PFPeA | 95 | | 25 - 150 | 07/20/17 10:13 | 07/24/17 20:07 | 10 |

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RE

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------------|--------|-----------|-----|------|------|---|----------------|----------------|---------|
| Perfluorotetradecanoic acid (PFTeA) | 1.6 | J M Q | 2.4 | 0.39 | ng/L | - | 07/20/17 09:15 | 07/25/17 15:05 | 1 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFDoA | 67 | | 25 - 150 | 07/20/17 09:15 | 07/25/17 15:05 | 1 |

Client Sample ID: TP-PFC-019-MID-CARBON

Lab Sample ID: 320-29732-2

Date Collected: 07/06/17 09:16

Matrix: Water

Date Received: 07/07/17 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------|-----------|-----|------|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | 100 | | 2.5 | 0.46 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluoropentanoic acid (PFPeA) | 16 | | 2.5 | 0.99 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluorohexanoic acid (PFHxA) | 1.2 | J | 2.5 | 0.78 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 2.0 | U M | 2.5 | 0.80 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluorooctanoic acid (PFOA) | 2.0 | U M | 2.5 | 0.75 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluorononanoic acid (PFNA) | 2.0 | U | 2.5 | 0.65 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluorodecanoic acid (PFDA) | 1.0 | U | 2.5 | 0.44 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.5 | 0.75 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.5 | 0.58 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluorotridecanoic Acid (PFTriA) | 2.0 | U | 2.5 | 0.55 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 2.0 | U | 2.5 | 0.92 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 2.0 | U | 2.5 | 0.87 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 2.0 | U | 2.5 | 0.71 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | 3.0 | U | 4.0 | 1.3 | ng/L | - | 07/20/17 10:13 | 07/24/17 20:14 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-MID-CARBON

Lab Sample ID: 320-29732-2

Date Collected: 07/06/17 09:16

Matrix: Water

Date Received: 07/07/17 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|------------|-----------|----------|------|------|---|----------------|----------------|---------|
| Perfluorodecanesulfonic acid (PFDS) | 3.0 | U | 4.0 | 1.2 | ng/L | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Perfluorooctane Sulfonamide (FOSA) | 2.5 | J | 40 | 0.64 | ng/L | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| Isotope Dilution | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| ¹³ C8 FOSA | 6 | Q | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹³ C4 PFBA | 101 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹³ C2 PFHxA | 100 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹³ C4 PFOA | 102 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹³ C5 PFNA | 81 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹³ C2 PFDA | 72 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹³ C2 PFUnA | 63 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹³ C2 PFDoA | 58 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹⁸ O2 PFHxS | 102 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹³ C4 PFOS | 99 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹³ C4-PFHpA | 116 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |
| ¹³ C5 PFPeA | 102 | | 25 - 150 | | | | 07/20/17 10:13 | 07/24/17 20:14 | 1 |

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RE

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|--------------|----------|------|------|---|----------------|----------------|---------|
| Perfluorotetradecanoic acid (PFTeA) | 1.4 | J M Q | 2.5 | 0.40 | ng/L | | 07/20/17 09:15 | 07/25/17 15:12 | 1 |
| Isotope Dilution | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| ¹³ C2 PFDoA | 92 | | 25 - 150 | | | | 07/20/17 09:15 | 07/25/17 15:12 | 1 |

Client Sample ID: TP-PFC-019-TPE

Lab Sample ID: 320-29732-3

Date Collected: 07/06/17 09:21

Matrix: Water

Date Received: 07/07/17 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|-------------|------------|----------|------|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | 85 | | 2.4 | 0.44 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluoropentanoic acid (PFPeA) | 24 | | 2.4 | 0.95 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorohexanoic acid (PFHxA) | 6.1 | | 2.4 | 0.76 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 1.9 | U | 2.4 | 0.77 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorooctanoic acid (PFOA) | 0.76 | J M | 2.4 | 0.72 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorononanoic acid (PFNA) | 1.9 | U | 2.4 | 0.63 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorodecanoic acid (PFDA) | 0.96 | U | 2.4 | 0.42 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluoroundecanoic acid (PFUnA) | 1.9 | U | 2.4 | 0.72 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorododecanoic acid (PFDoA) | 1.9 | U | 2.4 | 0.56 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorotridecanoic Acid (PFTriA) | 1.9 | U | 2.4 | 0.53 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 1.9 | U | 2.4 | 0.88 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 1.9 | U | 2.4 | 0.84 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 1.9 | U | 2.4 | 0.69 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | 2.9 | U | 3.9 | 1.2 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | 2.9 | U | 3.9 | 1.2 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Perfluorooctane Sulfonamide (FOSA) | 2.1 | J | 39 | 0.61 | ng/L | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| Isotope Dilution | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| ¹³ C8 FOSA | 2 | Q | 25 - 150 | | | | 07/20/17 10:13 | 07/23/17 16:30 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-TPE

Lab Sample ID: 320-29732-3

Date Collected: 07/06/17 09:21

Matrix: Water

Date Received: 07/07/17 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| ¹³ C4 PFBA | 102 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| ¹³ C2 PFHxA | 101 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| ¹³ C4 PFOA | 102 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| ¹³ C5 PFNA | 85 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| ¹³ C2 PFDA | 93 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| ¹³ C2 PFUnA | 78 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| ¹³ C2 PFDoA | 69 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| ¹⁸ O2 PFHxS | 105 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| ¹³ C4 PFOS | 102 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| ¹³ C4-PFHpA | 118 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |
| ¹³ C5 PFPeA | 98 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 16:30 | 1 |

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RE

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------------|--------|-----------|-----|------|------|---|----------------|----------------|---------|
| Perfluorotetradecanoic acid (PFTeA) | 1.5 | J M Q | 2.5 | 0.39 | ng/L | | 07/20/17 09:15 | 07/25/17 15:19 | 1 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| ¹³ C2 PFDoA | 87 | | 25 - 150 | 07/20/17 09:15 | 07/25/17 15:19 | 1 |

Client Sample ID: TP-PFC-019-TPE-D

Lab Sample ID: 320-29732-4

Date Collected: 07/06/17 00:00

Matrix: Water

Date Received: 07/07/17 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------|-----------|-----|------|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | 82 | | 2.4 | 0.44 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluoropentanoic acid (PFPeA) | 24 | | 2.4 | 0.96 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorohexanoic acid (PFHxA) | 6.4 | | 2.4 | 0.76 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 1.9 | U | 2.4 | 0.78 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorooctanoic acid (PFOA) | 1.9 | U M | 2.4 | 0.72 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorononanoic acid (PFNA) | 1.9 | U | 2.4 | 0.63 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorodecanoic acid (PFDA) | 0.97 | U | 2.4 | 0.43 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluoroundecanoic acid (PFUnA) | 1.9 | U | 2.4 | 0.72 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorododecanoic acid (PFDoA) | 1.9 | U | 2.4 | 0.57 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorotridecanoic Acid (PFTriA) | 1.9 | U | 2.4 | 0.53 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | 0.97 | U | 2.4 | 0.39 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 1.9 | U | 2.4 | 0.89 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 1.9 | U | 2.4 | 0.84 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 1.9 | U | 2.4 | 0.69 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | 2.9 | U | 3.9 | 1.2 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | 2.9 | U | 3.9 | 1.2 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| Perfluorooctane Sulfonamide (FOSA) | 1.9 | U | 39 | 0.62 | ng/L | | 07/18/17 07:22 | 07/21/17 21:06 | 1 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| ¹³ C8 FOSA | 0.3 | Q | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| ¹³ C4 PFBA | 96 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| ¹³ C2 PFHxA | 98 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| ¹³ C4 PFOA | 111 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| ¹³ C5 PFNA | 91 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| ¹³ C2 PFDA | 85 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
 Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-TPE-D

Lab Sample ID: 320-29732-4

Date Collected: 07/06/17 00:00

Matrix: Water

Date Received: 07/07/17 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | <i>Prepared</i> | <i>Analyzed</i> | <i>Dil Fac</i> |
|-------------------------|------------------|------------------|---------------|-----------------|-----------------|----------------|
| 13C2 PFUnA | 67 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| 13C2 PFDoA | 70 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| 18O2 PFHxS | 106 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| 13C4 PFOS | 100 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| 13C4-PFHpA | 118 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |
| 13C5 PFPeA | 98 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 21:06 | 1 |

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RE

| <i>Analyte</i> | <i>Result</i> | <i>Qualifier</i> | <i>LOQ</i> | <i>DL</i> | <i>Unit</i> | <i>D</i> | <i>Prepared</i> | <i>Analyzed</i> | <i>Dil Fac</i> |
|------------------------------------|---------------|------------------|------------|-----------|-------------|----------|-----------------|-----------------|----------------|
| Perfluorooctane Sulfonamide (FOSA) | 2.0 | U H | 41 | 0.65 | ng/L | | 07/25/17 09:58 | 07/27/17 22:18 | 1 |

| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> | <i>Prepared</i> | <i>Analyzed</i> | <i>Dil Fac</i> |
|-------------------------|------------------|------------------|---------------|-----------------|-----------------|----------------|
| 13C8 FOSA | 2 | Q | 25 - 150 | 07/25/17 09:58 | 07/27/17 22:18 | 1 |

Default Detection Limits

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons Prep: 3535

| Analyte | LOQ | DL | Units | Method |
|---------------------------------------|-----|------|-------|----------------|
| Perfluorobutanesulfonic acid (PFBS) | 2.5 | 0.92 | ng/L | 537 (Modified) |
| Perfluorobutanoic acid (PFBA) | 2.5 | 0.46 | ng/L | 537 (Modified) |
| Perfluorodecanesulfonic acid (PFDS) | 4.0 | 1.2 | ng/L | 537 (Modified) |
| Perfluorodecanoic acid (PFDA) | 2.5 | 0.44 | ng/L | 537 (Modified) |
| Perfluorododecanoic acid (PFDoA) | 2.5 | 0.58 | ng/L | 537 (Modified) |
| Perfluoroheptanesulfonic Acid (PFHpS) | 2.5 | 0.71 | ng/L | 537 (Modified) |
| Perfluoroheptanoic acid (PFHpA) | 2.5 | 0.80 | ng/L | 537 (Modified) |
| Perfluorohexanesulfonic acid (PFHxS) | 2.5 | 0.87 | ng/L | 537 (Modified) |
| Perfluorohexanoic acid (PFHxA) | 2.5 | 0.79 | ng/L | 537 (Modified) |
| Perfluorononanoic acid (PFNA) | 2.5 | 0.65 | ng/L | 537 (Modified) |
| Perfluorooctane Sulfonamide (FOSA) | 40 | 0.64 | ng/L | 537 (Modified) |
| Perfluorooctanesulfonic acid (PFOS) | 4.0 | 1.3 | ng/L | 537 (Modified) |
| Perfluorooctanoic acid (PFOA) | 2.5 | 0.75 | ng/L | 537 (Modified) |
| Perfluoropentanoic acid (PFPeA) | 2.5 | 0.99 | ng/L | 537 (Modified) |
| Perfluorotetradecanoic acid (PFTeA) | 2.5 | 0.40 | ng/L | 537 (Modified) |
| Perfluorotridecanoic Acid (PFTriA) | 2.5 | 0.55 | ng/L | 537 (Modified) |
| Perfluoroundecanoic acid (PFUnA) | 2.5 | 0.75 | ng/L | 537 (Modified) |

Isotope Dilution Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

| Lab Sample ID | Client Sample ID | Percent Isotope Dilution Recovery (Acceptance Limits) | | | | | | | |
|---------------------|------------------------|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------------------|
| | | 3C8 FOS/ (25-150) | 3C4 PFB/ (25-150) | 3C2 PFHx (25-150) | 3C4 PFO/ (25-150) | 3C5 PFN/ (25-150) | 3C2 PFD/ (25-150) | 3C2 PFUn (25-150) | 3C2 PFD _o (25-150) |
| 320-29732-1 | TP-PFC-019-TPI | 14 Q | 77 | 71 | 67 | 66 | 65 | 48 | 45 |
| 320-29732-1 - DL | TP-PFC-019-TPI | 15 Q | 98 | 94 | 88 | 77 | 62 | 54 | 47 |
| 320-29732-1 - RE | TP-PFC-019-TPI | | | | | | | | 67 |
| 320-29732-2 | TP-PFC-019-MID-CARBON | 6 Q | 101 | 100 | 102 | 81 | 72 | 63 | 58 |
| 320-29732-2 - RE | TP-PFC-019-MID-CARBON | | | | | | | | 92 |
| 320-29732-3 | TP-PFC-019-TPE | 2 Q | 102 | 101 | 102 | 85 | 93 | 78 | 69 |
| 320-29732-3 - RE | TP-PFC-019-TPE | | | | | | | | 87 |
| 320-29732-4 | TP-PFC-019-TPE-D | 0.3 Q | 96 | 98 | 111 | 91 | 85 | 67 | 70 |
| 320-29732-4 - RE | TP-PFC-019-TPE-D | 2 Q | | | | | | | |
| LCS 320-174599/2-A | Lab Control Sample | 17 Q | 100 | 102 | 119 | 109 | 126 | 110 | 97 |
| LCS 320-175074/2-A | Lab Control Sample | | | | | | | | 105 |
| LCS 320-175097/2-A | Lab Control Sample | 7 Q | 101 | 100 | 113 | 98 | 120 | 104 | 86 |
| LCS 320-175742/2-A | Lab Control Sample | 62 | | | | | | | |
| LCSD 320-174599/3-A | Lab Control Sample Dup | 20 Q | 97 | 105 | 125 | 111 | 128 | 117 | 101 |
| LCSD 320-175074/3-A | Lab Control Sample Dup | | | | | | | | 106 |
| LCSD 320-175097/3-A | Lab Control Sample Dup | 25 | 111 | 105 | 116 | 105 | 128 | 104 | 94 |
| LCSD 320-175742/3-A | Lab Control Sample Dup | 55 | | | | | | | |
| MB 320-174599/1-A | Method Blank | 47 | 113 | 115 | 136 | 123 | 138 | 137 | 114 |
| MB 320-175074/1-A | Method Blank | | | | | | | | 116 |
| MB 320-175097/1-A | Method Blank | 51 | 103 | 100 | 110 | 102 | 118 | 98 | 84 |
| MB 320-175742/1-A | Method Blank | 63 | | | | | | | |

| Lab Sample ID | Client Sample ID | Percent Isotope Dilution Recovery (Acceptance Limits) | | | |
|---------------------|------------------------|---|----------------------|----------------------|----------------------|
| | | 3O2 PFHx (25-150) | 3C4 PFO: (25-150) | 3C4-PFHp (25-150) | 3C5 PFPe (25-150) |
| 320-29732-1 | TP-PFC-019-TPI | 87 | 83 | 93 | 80 |
| 320-29732-1 - DL | TP-PFC-019-TPI | 96 | 82 | 105 | 95 |
| 320-29732-1 - RE | TP-PFC-019-TPI | | | | |
| 320-29732-2 | TP-PFC-019-MID-CARBON | 102 | 99 | 116 | 102 |
| 320-29732-2 - RE | TP-PFC-019-MID-CARBON | | | | |
| 320-29732-3 | TP-PFC-019-TPE | 105 | 102 | 118 | 98 |
| 320-29732-3 - RE | TP-PFC-019-TPE | | | | |
| 320-29732-4 | TP-PFC-019-TPE-D | 106 | 100 | 118 | 98 |
| 320-29732-4 - RE | TP-PFC-019-TPE-D | | | | |
| LCS 320-174599/2-A | Lab Control Sample | 97 | 93 | 135 | 101 |
| LCS 320-175074/2-A | Lab Control Sample | | | | |
| LCS 320-175097/2-A | Lab Control Sample | 101 | 94 | 119 | 102 |
| LCS 320-175742/2-A | Lab Control Sample | | | | |
| LCSD 320-174599/3-A | Lab Control Sample Dup | 97 | 96 | 132 | 101 |
| LCSD 320-175074/3-A | Lab Control Sample Dup | | | | |
| LCSD 320-175097/3-A | Lab Control Sample Dup | 108 | 95 | 124 | 104 |
| LCSD 320-175742/3-A | Lab Control Sample Dup | | | | |
| MB 320-174599/1-A | Method Blank | 111 | 105 | 148 | 112 |
| MB 320-175074/1-A | Method Blank | | | | |
| MB 320-175097/1-A | Method Blank | 96 | 93 | 114 | 105 |
| MB 320-175742/1-A | Method Blank | | | | |

Surrogate Legend

13C8 FOSA = 13C8 FOSA
13C4 PFBA = 13C4 PFBA

Isotope Dilution Summary

Client: Tetra Tech, Inc.

Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

13C2 PFHxA = 13C2 PFHxA
13C4 PFOA = 13C4 PFOA
13C5 PFNA = 13C5 PFNA
13C2 PFDA = 13C2 PFDA
13C2 PFUnA = 13C2 PFUnA
13C2 PFDoA = 13C2 PFDoA
18O2 PFHxS = 18O2 PFHxS
13C4 PFOS = 13C4 PFOS
13C4-PFHpA = 13C4-PFHpA
13C5 PFPeA = 13C5 PFPeA

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-174599/1-A
Matrix: Water
Analysis Batch: 175462

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 174599

| Analyte | MB | MB | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------|-----------|-----|------|------|---|----------------|----------------|---------|
| | Result | Qualifier | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 1.0 | U M | 2.5 | 0.46 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluoropentanoic acid (PFPeA) | 2.0 | U | 2.5 | 0.99 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorohexanoic acid (PFHxA) | 2.0 | U | 2.5 | 0.79 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 2.0 | U | 2.5 | 0.80 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorooctanoic acid (PFOA) | 2.0 | U | 2.5 | 0.75 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorononanoic acid (PFNA) | 2.0 | U | 2.5 | 0.65 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorodecanoic acid (PFDA) | 1.0 | U | 2.5 | 0.44 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.5 | 0.75 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.5 | 0.58 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorotridecanoic Acid (PFTriA) | 0.631 | J | 2.5 | 0.55 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | 0.711 | J M | 2.5 | 0.40 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 2.0 | U | 2.5 | 0.92 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 2.0 | U | 2.5 | 0.87 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 2.0 | U | 2.5 | 0.71 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | 3.0 | U | 4.0 | 1.3 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | 3.0 | U | 4.0 | 1.2 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| Perfluorooctane Sulfonamide (FOSA) | 2.0 | U | 40 | 0.64 | ng/L | | 07/18/17 07:22 | 07/21/17 20:45 | 1 |

| Isotope Dilution | MB | MB | Limits | Prepared | Analyzed | Dil Fac |
|------------------|-----------|-----------|----------|----------------|----------------|---------|
| | %Recovery | Qualifier | | | | |
| 13C8 FOSA | 47 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 13C4 PFBA | 113 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 13C2 PFHxA | 115 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 13C4 PFOA | 136 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 13C5 PFNA | 123 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 13C2 PFDA | 138 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 13C2 PFUnA | 137 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 13C2 PFDoA | 114 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 18O2 PFHxS | 111 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 13C4 PFOS | 105 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 13C4-PFHpA | 148 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |
| 13C5 PFPeA | 112 | | 25 - 150 | 07/18/17 07:22 | 07/21/17 20:45 | 1 |

Lab Sample ID: LCS 320-174599/2-A
Matrix: Water
Analysis Batch: 175462

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 174599

| Analyte | Spike Added | LCS | LCS | Unit | D | %Rec | Limits |
|----------------------------------|-------------|--------|-----------|------|---|------|----------|
| | | Result | Qualifier | | | | |
| Perfluorobutanoic acid (PFBA) | 40.0 | 44.8 | | ng/L | | 112 | 60 - 140 |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 42.2 | | ng/L | | 106 | 60 - 140 |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 42.7 | | ng/L | | 107 | 60 - 140 |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 40.6 | | ng/L | | 102 | 60 - 140 |
| Perfluorooctanoic acid (PFOA) | 40.0 | 42.1 | | ng/L | | 105 | 60 - 140 |
| Perfluorononanoic acid (PFNA) | 40.0 | 42.6 | | ng/L | | 106 | 60 - 140 |
| Perfluorodecanoic acid (PFDA) | 40.0 | 43.8 | | ng/L | | 110 | 60 - 140 |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 43.8 | | ng/L | | 109 | 60 - 140 |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 43.5 | | ng/L | | 109 | 60 - 140 |

TestAmerica Sacramento

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-174599/2-A

Matrix: Water

Analysis Batch: 175462

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 174599

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|---------------------------------------|-------------|------------|---------------|------|---|------|----------|
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 43.4 | | ng/L | | 109 | 50 - 150 |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 48.6 | | ng/L | | 122 | 50 - 150 |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 38.5 | | ng/L | | 109 | 50 - 150 |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 38.9 | | ng/L | | 107 | 60 - 140 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 44.7 | | ng/L | | 117 | 50 - 150 |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 40.0 | | ng/L | | 108 | 60 - 140 |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 39.6 | | ng/L | | 103 | 50 - 150 |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 42.9 | | ng/L | | 107 | 60 - 140 |

| Isotope Dilution | LCS %Recovery | LCS Qualifier | Limits |
|------------------|---------------|---------------|----------|
| 13C8 FOSA | 17 | Q | 25 - 150 |
| 13C4 PFBA | 100 | | 25 - 150 |
| 13C2 PFHxA | 102 | | 25 - 150 |
| 13C4 PFOA | 119 | | 25 - 150 |
| 13C5 PFNA | 109 | | 25 - 150 |
| 13C2 PFDA | 126 | | 25 - 150 |
| 13C2 PFUnA | 110 | | 25 - 150 |
| 13C2 PFDoA | 97 | | 25 - 150 |
| 18O2 PFHxS | 97 | | 25 - 150 |
| 13C4 PFOS | 93 | | 25 - 150 |
| 13C4-PFHpA | 135 | | 25 - 150 |
| 13C5 PFPeA | 101 | | 25 - 150 |

Lab Sample ID: LCSD 320-174599/3-A

Matrix: Water

Analysis Batch: 175462

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 174599

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | Limits | RPD | Limit |
|-------------------------------------|-------------|-------------|----------------|------|---|------|----------|-----|-------|
| Perfluorobutanoic acid (PFBA) | 40.0 | 47.2 | | ng/L | | 118 | 60 - 140 | 5 | 30 |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 43.9 | | ng/L | | 110 | 60 - 140 | 4 | 30 |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 42.9 | | ng/L | | 107 | 60 - 140 | 0 | 30 |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 43.3 | | ng/L | | 108 | 60 - 140 | 6 | 30 |
| Perfluorooctanoic acid (PFOA) | 40.0 | 42.9 | | ng/L | | 107 | 60 - 140 | 2 | 30 |
| Perfluorononanoic acid (PFNA) | 40.0 | 42.8 | | ng/L | | 107 | 60 - 140 | 1 | 30 |
| Perfluorodecanoic acid (PFDA) | 40.0 | 42.5 | | ng/L | | 106 | 60 - 140 | 3 | 30 |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 40.6 | | ng/L | | 101 | 60 - 140 | 8 | 30 |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 43.8 | | ng/L | | 109 | 60 - 140 | 1 | 30 |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 46.6 | | ng/L | | 117 | 50 - 150 | 7 | 30 |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 49.4 | | ng/L | | 123 | 50 - 150 | 2 | 30 |

TestAmerica Sacramento

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-174599/3-A

Matrix: Water

Analysis Batch: 175462

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 174599

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---------------------------------------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| | | | | | | | | | |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 37.4 | | ng/L | | 106 | 50 - 150 | 3 | 30 |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 38.5 | | ng/L | | 106 | 60 - 140 | 1 | 30 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 41.6 | | ng/L | | 109 | 50 - 150 | 7 | 30 |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 39.2 | | ng/L | | 106 | 60 - 140 | 2 | 30 |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 38.4 | | ng/L | | 100 | 50 - 150 | 3 | 30 |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 43.3 | | ng/L | | 108 | 60 - 140 | 1 | 30 |

| Isotope Dilution | %Recovery | LCSD Qualifier | Limits |
|------------------|-----------|----------------|----------|
| | | | |
| 13C8 FOSA | 20 | Q | 25 - 150 |
| 13C4 PFBA | 97 | | 25 - 150 |
| 13C2 PFHxA | 105 | | 25 - 150 |
| 13C4 PFOA | 125 | | 25 - 150 |
| 13C5 PFNA | 111 | | 25 - 150 |
| 13C2 PFDA | 128 | | 25 - 150 |
| 13C2 PFUnA | 117 | | 25 - 150 |
| 13C2 PFDoA | 101 | | 25 - 150 |
| 18O2 PFHxS | 97 | | 25 - 150 |
| 13C4 PFOS | 96 | | 25 - 150 |
| 13C4-PFHpA | 132 | | 25 - 150 |
| 13C5 PFPeA | 101 | | 25 - 150 |

Lab Sample ID: MB 320-175074/1-A

Matrix: Water

Analysis Batch: 175951

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 175074

| Analyte | MB Result | MB Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------------------|-----------|--------------|-----|------|------|---|----------------|----------------|---------|
| | | | | | | | | | |
| Perfluorotetradecanoic acid (PFTeA) | 0.807 | J M | 2.5 | 0.40 | ng/L | | 07/20/17 09:15 | 07/25/17 14:17 | 1 |

| Isotope Dilution | %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------|-----------|--------------|----------|----------------|----------------|---------|
| | | | | | | |
| 13C2 PFDoA | 116 | | 25 - 150 | 07/20/17 09:15 | 07/25/17 14:17 | 1 |

Lab Sample ID: LCS 320-175074/2-A

Matrix: Water

Analysis Batch: 175951

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 175074

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|-------------------------------------|-------------|------------|---------------|------|---|------|--------------|
| | | | | | | | |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 58.6 | | ng/L | | 146 | 50 - 150 |

| Isotope Dilution | %Recovery | LCS Qualifier | Limits |
|------------------|-----------|---------------|----------|
| | | | |
| 13C2 PFDoA | 105 | | 25 - 150 |

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-175074/3-A

Matrix: Water

Analysis Batch: 175951

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 175074

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|-------------------------------------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 64.6 | Q | ng/L | | 162 | 50 - 150 | 10 | 30 |

| Isotope Dilution | LCSD %Recovery | LCSD Qualifier | Limits |
|------------------|----------------|----------------|----------|
| 13C2 PFDoA | 106 | | 25 - 150 |

Lab Sample ID: MB 320-175097/1-A

Matrix: Water

Analysis Batch: 175528

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 175097

| Analyte | MB Result | MB Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|-----------|--------------|-----|------|------|---|----------------|----------------|---------|
| Perfluorobutanoic acid (PFBA) | 1.0 | U | 2.5 | 0.46 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluoropentanoic acid (PFPeA) | 2.0 | U | 2.5 | 0.99 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorohexanoic acid (PFHxA) | 2.0 | U | 2.5 | 0.79 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 2.0 | U | 2.5 | 0.80 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorooctanoic acid (PFOA) | 2.0 | U | 2.5 | 0.75 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorononanoic acid (PFNA) | 2.0 | U | 2.5 | 0.65 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorodecanoic acid (PFDA) | 1.0 | U | 2.5 | 0.44 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.5 | 0.75 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.5 | 0.58 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorotridecanoic Acid (PFTriA) | 2.0 | U | 2.5 | 0.55 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 2.0 | U | 2.5 | 0.92 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 2.0 | U | 2.5 | 0.87 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 2.0 | U | 2.5 | 0.71 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorooctanesulfonic acid (PFOS) | 3.0 | U | 4.0 | 1.3 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorodecanesulfonic acid (PFDS) | 3.0 | U | 4.0 | 1.2 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| Perfluorooctane Sulfonamide (FOSA) | 2.0 | U | 40 | 0.64 | ng/L | | 07/20/17 10:13 | 07/23/17 14:39 | 1 |

| Isotope Dilution | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------|--------------|--------------|----------|----------------|----------------|---------|
| 13C8 FOSA | 51 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 13C4 PFBA | 103 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 13C2 PFHxA | 100 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 13C4 PFOA | 110 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 13C5 PFNA | 102 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 13C2 PFDA | 118 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 13C2 PFUnA | 98 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 13C2 PFDoA | 84 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 18O2 PFHxS | 96 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 13C4 PFOS | 93 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 13C4-PFHpA | 114 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |
| 13C5 PFPeA | 105 | | 25 - 150 | 07/20/17 10:13 | 07/23/17 14:39 | 1 |

Lab Sample ID: LCS 320-175097/2-A

Matrix: Water

Analysis Batch: 175528

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 175097

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|-------------------------------|-------------|------------|---------------|------|---|------|--------------|
| Perfluorobutanoic acid (PFBA) | 40.0 | 43.9 | | ng/L | | 110 | 60 - 140 |

TestAmerica Sacramento

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-175097/2-A

Matrix: Water

Analysis Batch: 175528

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 175097

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|---------------------------------------|-------------|------------|---------------|------|---|------|----------|
| Perfluoropentanoic acid (PFPeA) | 40.0 | 40.4 | | ng/L | | 101 | 60 - 140 |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 41.9 | | ng/L | | 105 | 60 - 140 |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 42.1 | | ng/L | | 105 | 60 - 140 |
| Perfluorooctanoic acid (PFOA) | 40.0 | 39.8 | | ng/L | | 100 | 60 - 140 |
| Perfluorononanoic acid (PFNA) | 40.0 | 42.2 | | ng/L | | 105 | 60 - 140 |
| Perfluorodecanoic acid (PFDA) | 40.0 | 42.6 | | ng/L | | 107 | 60 - 140 |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 41.4 | | ng/L | | 104 | 60 - 140 |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 46.3 | | ng/L | | 116 | 60 - 140 |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 54.0 | | ng/L | | 135 | 50 - 150 |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 39.2 | | ng/L | | 111 | 50 - 150 |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 35.8 | | ng/L | | 98 | 60 - 140 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 44.5 | | ng/L | | 117 | 50 - 150 |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 38.2 | | ng/L | | 103 | 60 - 140 |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 42.5 | | ng/L | | 110 | 50 - 150 |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 43.1 | | ng/L | | 108 | 60 - 140 |

| Isotope Dilution | LCS %Recovery | LCS Qualifier | Limits |
|------------------|---------------|---------------|----------|
| 13C8 FOSA | 7 | Q | 25 - 150 |
| 13C4 PFBA | 101 | | 25 - 150 |
| 13C2 PFHxA | 100 | | 25 - 150 |
| 13C4 PFOA | 113 | | 25 - 150 |
| 13C5 PFNA | 98 | | 25 - 150 |
| 13C2 PFDA | 120 | | 25 - 150 |
| 13C2 PFUnA | 104 | | 25 - 150 |
| 13C2 PFDoA | 86 | | 25 - 150 |
| 18O2 PFHxS | 101 | | 25 - 150 |
| 13C4 PFOS | 94 | | 25 - 150 |
| 13C4-PFHpA | 119 | | 25 - 150 |
| 13C5 PFPeA | 102 | | 25 - 150 |

Lab Sample ID: LCSD 320-175097/3-A

Matrix: Water

Analysis Batch: 175528

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 175097

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | Limits | RPD | RPD Limit |
|---------------------------------|-------------|-------------|----------------|------|---|------|----------|-----|-----------|
| Perfluorobutanoic acid (PFBA) | 40.0 | 45.8 | | ng/L | | 114 | 60 - 140 | 4 | 30 |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 43.1 | | ng/L | | 108 | 60 - 140 | 6 | 30 |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 43.2 | | ng/L | | 108 | 60 - 140 | 3 | 30 |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 42.3 | | ng/L | | 106 | 60 - 140 | 0 | 30 |
| Perfluorooctanoic acid (PFOA) | 40.0 | 41.6 | | ng/L | | 104 | 60 - 140 | 4 | 30 |
| Perfluorononanoic acid (PFNA) | 40.0 | 40.9 | | ng/L | | 102 | 60 - 140 | 3 | 30 |
| Perfluorodecanoic acid (PFDA) | 40.0 | 39.8 | | ng/L | | 100 | 60 - 140 | 7 | 30 |

TestAmerica Sacramento

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-175097/3-A

Matrix: Water

Analysis Batch: 175528

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 175097

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---------------------------------------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| | | | | | | | | | |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 42.6 | | ng/L | | 107 | 60 - 140 | 3 | 30 |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 45.0 | | ng/L | | 113 | 60 - 140 | 3 | 30 |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 48.6 | | ng/L | | 122 | 50 - 150 | 10 | 30 |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 39.5 | | ng/L | | 112 | 50 - 150 | 1 | 30 |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 35.3 | | ng/L | | 97 | 60 - 140 | 1 | 30 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 45.3 | | ng/L | | 119 | 50 - 150 | 2 | 30 |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 41.3 | | ng/L | | 111 | 60 - 140 | 8 | 30 |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 43.3 | | ng/L | | 112 | 50 - 150 | 2 | 30 |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 44.6 | | ng/L | | 112 | 60 - 140 | 3 | 30 |

| Isotope Dilution | LCSD %Recovery | LCSD Qualifier | Limits |
|------------------|----------------|----------------|----------|
| 13C8 FOSA | 25 | | 25 - 150 |
| 13C4 PFBA | 111 | | 25 - 150 |
| 13C2 PFHxA | 105 | | 25 - 150 |
| 13C4 PFOA | 116 | | 25 - 150 |
| 13C5 PFNA | 105 | | 25 - 150 |
| 13C2 PFDA | 128 | | 25 - 150 |
| 13C2 PFUnA | 104 | | 25 - 150 |
| 13C2 PFDoA | 94 | | 25 - 150 |
| 18O2 PFHxS | 108 | | 25 - 150 |
| 13C4 PFOS | 95 | | 25 - 150 |
| 13C4-PFHpA | 124 | | 25 - 150 |
| 13C5 PFPeA | 104 | | 25 - 150 |

Lab Sample ID: MB 320-175742/1-A

Matrix: Water

Analysis Batch: 176487

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 175742

| Analyte | MB Result | MB Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------------|-----------|--------------|-----|------|------|---|----------------|----------------|---------|
| Perfluorooctane Sulfonamide (FOSA) | 2.0 | U | 40 | 0.64 | ng/L | | 07/25/17 09:12 | 07/27/17 20:55 | 1 |

| Isotope Dilution | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------|--------------|--------------|----------|----------------|----------------|---------|
| 13C8 FOSA | 63 | | 25 - 150 | 07/25/17 09:12 | 07/27/17 20:55 | 1 |

Lab Sample ID: LCS 320-175742/2-A

Matrix: Water

Analysis Batch: 176487

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 175742

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|------------------------------------|-------------|------------|---------------|------|---|------|--------------|
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 44.4 | | ng/L | | 111 | 60 - 140 |

TestAmerica Sacramento

QC Sample Results

Client: Tetra Tech, Inc.
 Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

| | LCS | LCS | |
|-------------------------|------------------|------------------|---------------|
| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
| <i>13C8 FOSA</i> | 62 | | 25 - 150 |

Lab Sample ID: LCSD 320-175742/3-A
Matrix: Water
Analysis Batch: 176487

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 175742

| Analyte | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. | | RPD | |
|------------------------------------|--|--------------------|--------------------|-----------------------|-------------|----------|-------------|---------------|------------|--------------|--------------|
| | | | | | | | | Limits | RPD | Limit | Limit |
| Perfluorooctane Sulfonamide (FOSA) | | 40.0 | 45.0 | | ng/L | | 112 | 60 - 140 | 1 | 30 | |

| | LCSD | LCSD | |
|-------------------------|------------------|------------------|---------------|
| <i>Isotope Dilution</i> | <i>%Recovery</i> | <i>Qualifier</i> | <i>Limits</i> |
| <i>13C8 FOSA</i> | 55 | | 25 - 150 |

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

LCMS

Prep Batch: 174599

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-29732-4 | TP-PFC-019-TPE-D | Total/NA | Water | 3535 | |
| MB 320-174599/1-A | Method Blank | Total/NA | Water | 3535 | |
| LCS 320-174599/2-A | Lab Control Sample | Total/NA | Water | 3535 | |
| LCSD 320-174599/3-A | Lab Control Sample Dup | Total/NA | Water | 3535 | |

Prep Batch: 175074

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-29732-1 - RE | TP-PFC-019-TPI | Total/NA | Water | 3535 | |
| 320-29732-2 - RE | TP-PFC-019-MID-CARBON | Total/NA | Water | 3535 | |
| 320-29732-3 - RE | TP-PFC-019-TPE | Total/NA | Water | 3535 | |
| MB 320-175074/1-A | Method Blank | Total/NA | Water | 3535 | |
| LCS 320-175074/2-A | Lab Control Sample | Total/NA | Water | 3535 | |
| LCSD 320-175074/3-A | Lab Control Sample Dup | Total/NA | Water | 3535 | |

Prep Batch: 175097

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-29732-1 | TP-PFC-019-TPI | Total/NA | Water | 3535 | |
| 320-29732-1 - DL | TP-PFC-019-TPI | Total/NA | Water | 3535 | |
| 320-29732-2 | TP-PFC-019-MID-CARBON | Total/NA | Water | 3535 | |
| 320-29732-3 | TP-PFC-019-TPE | Total/NA | Water | 3535 | |
| MB 320-175097/1-A | Method Blank | Total/NA | Water | 3535 | |
| LCS 320-175097/2-A | Lab Control Sample | Total/NA | Water | 3535 | |
| LCSD 320-175097/3-A | Lab Control Sample Dup | Total/NA | Water | 3535 | |

Analysis Batch: 175462

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|----------------|------------|
| 320-29732-4 | TP-PFC-019-TPE-D | Total/NA | Water | 537 (Modified) | 174599 |
| MB 320-174599/1-A | Method Blank | Total/NA | Water | 537 (Modified) | 174599 |
| LCS 320-174599/2-A | Lab Control Sample | Total/NA | Water | 537 (Modified) | 174599 |
| LCSD 320-174599/3-A | Lab Control Sample Dup | Total/NA | Water | 537 (Modified) | 174599 |

Analysis Batch: 175528

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|----------------|------------|
| 320-29732-1 | TP-PFC-019-TPI | Total/NA | Water | 537 (Modified) | 175097 |
| 320-29732-3 | TP-PFC-019-TPE | Total/NA | Water | 537 (Modified) | 175097 |
| MB 320-175097/1-A | Method Blank | Total/NA | Water | 537 (Modified) | 175097 |
| LCS 320-175097/2-A | Lab Control Sample | Total/NA | Water | 537 (Modified) | 175097 |
| LCSD 320-175097/3-A | Lab Control Sample Dup | Total/NA | Water | 537 (Modified) | 175097 |

Prep Batch: 175742

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-29732-4 - RE | TP-PFC-019-TPE-D | Total/NA | Water | 3535 | |
| MB 320-175742/1-A | Method Blank | Total/NA | Water | 3535 | |
| LCS 320-175742/2-A | Lab Control Sample | Total/NA | Water | 3535 | |
| LCSD 320-175742/3-A | Lab Control Sample Dup | Total/NA | Water | 3535 | |

Analysis Batch: 175757

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|-----------------------|-----------|--------|----------------|------------|
| 320-29732-1 - DL | TP-PFC-019-TPI | Total/NA | Water | 537 (Modified) | 175097 |
| 320-29732-2 | TP-PFC-019-MID-CARBON | Total/NA | Water | 537 (Modified) | 175097 |

TestAmerica Sacramento

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

LCMS (Continued)

Analysis Batch: 175951

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|----------------|------------|
| 320-29732-1 - RE | TP-PFC-019-TPI | Total/NA | Water | 537 (Modified) | 175074 |
| 320-29732-2 - RE | TP-PFC-019-MID-CARBON | Total/NA | Water | 537 (Modified) | 175074 |
| 320-29732-3 - RE | TP-PFC-019-TPE | Total/NA | Water | 537 (Modified) | 175074 |
| MB 320-175074/1-A | Method Blank | Total/NA | Water | 537 (Modified) | 175074 |
| LCS 320-175074/2-A | Lab Control Sample | Total/NA | Water | 537 (Modified) | 175074 |
| LCSD 320-175074/3-A | Lab Control Sample Dup | Total/NA | Water | 537 (Modified) | 175074 |

Analysis Batch: 176487

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|----------------|------------|
| 320-29732-4 - RE | TP-PFC-019-TPE-D | Total/NA | Water | 537 (Modified) | 175742 |
| MB 320-175742/1-A | Method Blank | Total/NA | Water | 537 (Modified) | 175742 |
| LCS 320-175742/2-A | Lab Control Sample | Total/NA | Water | 537 (Modified) | 175742 |
| LCSD 320-175742/3-A | Lab Control Sample Dup | Total/NA | Water | 537 (Modified) | 175742 |

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-TPI

Date Collected: 07/06/17 09:11

Date Received: 07/07/17 10:00

Lab Sample ID: 320-29732-1

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 175097 | 07/20/17 10:13 | CCB | TAL SAC |
| Total/NA | Analysis | 537 (Modified) | | 1 | 175528 | 07/23/17 16:16 | SBC | TAL SAC |
| Total/NA | Prep | 3535 | DL | | 175097 | 07/20/17 10:13 | CCB | TAL SAC |
| Total/NA | Analysis | 537 (Modified) | DL | 10 | 175757 | 07/24/17 20:07 | SBC | TAL SAC |
| Total/NA | Prep | 3535 | RE | | 175074 | 07/20/17 09:15 | J1S | TAL SAC |
| Total/NA | Analysis | 537 (Modified) | RE | 1 | 175951 | 07/25/17 15:05 | SBC | TAL SAC |

Client Sample ID: TP-PFC-019-MID-CARBON

Date Collected: 07/06/17 09:16

Date Received: 07/07/17 10:00

Lab Sample ID: 320-29732-2

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 175097 | 07/20/17 10:13 | CCB | TAL SAC |
| Total/NA | Analysis | 537 (Modified) | | 1 | 175757 | 07/24/17 20:14 | SBC | TAL SAC |
| Total/NA | Prep | 3535 | RE | | 175074 | 07/20/17 09:15 | J1S | TAL SAC |
| Total/NA | Analysis | 537 (Modified) | RE | 1 | 175951 | 07/25/17 15:12 | SBC | TAL SAC |

Client Sample ID: TP-PFC-019-TPE

Date Collected: 07/06/17 09:21

Date Received: 07/07/17 10:00

Lab Sample ID: 320-29732-3

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 175097 | 07/20/17 10:13 | CCB | TAL SAC |
| Total/NA | Analysis | 537 (Modified) | | 1 | 175528 | 07/23/17 16:30 | SBC | TAL SAC |
| Total/NA | Prep | 3535 | RE | | 175074 | 07/20/17 09:15 | J1S | TAL SAC |
| Total/NA | Analysis | 537 (Modified) | RE | 1 | 175951 | 07/25/17 15:19 | SBC | TAL SAC |

Client Sample ID: TP-PFC-019-TPE-D

Date Collected: 07/06/17 00:00

Date Received: 07/07/17 10:00

Lab Sample ID: 320-29732-4

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 174599 | 07/18/17 07:22 | CCB | TAL SAC |
| Total/NA | Analysis | 537 (Modified) | | 1 | 175462 | 07/21/17 21:06 | SBC | TAL SAC |
| Total/NA | Prep | 3535 | RE | | 175742 | 07/25/17 09:58 | J1S | TAL SAC |
| Total/NA | Analysis | 537 (Modified) | RE | 1 | 176487 | 07/27/17 22:18 | JRB | TAL SAC |

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
 Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Laboratory: TestAmerica Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------|---------|------------|-----------------------|-----------------|
| Oregon | NELAP | 10 | 4040 | 01-28-18 |

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

| Analysis Method | Prep Method | Matrix | Analyte |
|-----------------|-------------|--------|---------------------------------------|
| 537 (Modified) | 3535 | Water | Perfluorobutanesulfonic acid (PFBS) |
| 537 (Modified) | 3535 | Water | Perfluorobutanoic acid (PFBA) |
| 537 (Modified) | 3535 | Water | Perfluorodecanesulfonic acid (PFDS) |
| 537 (Modified) | 3535 | Water | Perfluorodecanoic acid (PFDA) |
| 537 (Modified) | 3535 | Water | Perfluorododecanoic acid (PFDoA) |
| 537 (Modified) | 3535 | Water | Perfluoroheptanesulfonic Acid (PFHpS) |
| 537 (Modified) | 3535 | Water | Perfluoroheptanoic acid (PFHpA) |
| 537 (Modified) | 3535 | Water | Perfluorohexanesulfonic acid (PFHxS) |
| 537 (Modified) | 3535 | Water | Perfluorohexanoic acid (PFHxA) |
| 537 (Modified) | 3535 | Water | Perfluorononanoic acid (PFNA) |
| 537 (Modified) | 3535 | Water | Perfluorooctane Sulfonamide (FOSA) |
| 537 (Modified) | 3535 | Water | Perfluorooctanesulfonic acid (PFOS) |
| 537 (Modified) | 3535 | Water | Perfluorooctanoic acid (PFOA) |
| 537 (Modified) | 3535 | Water | Perfluoropentanoic acid (PFPeA) |
| 537 (Modified) | 3535 | Water | Perfluorotetradecanoic acid (PFTeA) |
| 537 (Modified) | 3535 | Water | Perfluorotridecanoic Acid (PFTriA) |
| 537 (Modified) | 3535 | Water | Perfluoroundecanoic acid (PFUnA) |

Method Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

| Method | Method Description | Protocol | Laboratory |
|----------------|-----------------------------|-----------------|-------------------|
| 537 (Modified) | Perfluorinated Hydrocarbons | EPA | TAL SAC |

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|----------------------|-------------------------|---------------|------------------|-----------------|
| 320-29732-1 | TP-PFC-019-TPI | Water | 07/06/17 09:11 | 07/07/17 10:00 |
| 320-29732-2 | TP-PFC-019-MID-CARBON | Water | 07/06/17 09:16 | 07/07/17 10:00 |
| 320-29732-3 | TP-PFC-019-TPE | Water | 07/06/17 09:21 | 07/07/17 10:00 |
| 320-29732-4 | TP-PFC-019-TPE-D | Water | 07/06/17 00:00 | 07/07/17 10:00 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 175252

Lab Sample ID: IC 320-175252/3 Client Sample ID: _____

Date Analyzed: 07/20/17 17:15 Lab File ID: 2017.07.20ICAL_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|--------------------|------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 3.09 | Assign Peak | phomsophat | 07/20/17 18:19 |
| Perfluorotetradecanoic acid (PFTeA) | 4.58 | Assign Peak | phomsophat | 07/20/17 18:19 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 175462

Lab Sample ID: MB 320-174599/1-A Client Sample ID: _____

Date Analyzed: 07/21/17 20:45 Lab File ID: 2017.07.21C_016.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorobutanoic acid (PFBA) | 1.53 | Baseline | chandrase nas | 07/24/17 16:04 |
| Perfluorotetradecanoic acid (PFTeA) | 4.51 | Baseline | chandrase nas | 07/24/17 16:04 |

Lab Sample ID: 320-29732-4 Client Sample ID: TP-PFC-019-TPE-D

Date Analyzed: 07/21/17 21:06 Lab File ID: 2017.07.21C_019.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanoic acid (PFOA) | 2.66 | Isomers | chandrase nas | 07/24/17 16:05 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 175476

Lab Sample ID: IC 320-175476/3 Client Sample ID: _____

Date Analyzed: 07/23/17 13:10 Lab File ID: 2017.07.23ICAL_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|--------------------------------------|----------------|--------------------|----------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorohexanesulfonic acid (PFHxS) | 2.45 | Assign Peak | phomsopha t | 07/23/17 14:56 |

Lab Sample ID: IC 320-175476/5 Client Sample ID: _____

Date Analyzed: 07/23/17 13:23 Lab File ID: 2017.07.23ICAL_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|--------------------------------------|----------------|--------------------|----------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorohexanesulfonic acid (PFHxS) | 2.44 | Assign Peak | phomsopha t | 07/23/17 15:01 |

Lab Sample ID: IC 320-175476/6 Client Sample ID: _____

Date Analyzed: 07/23/17 13:30 Lab File ID: 2017.07.23ICAL_006.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|--------------------------------------|----------------|--------------------|----------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorohexanesulfonic acid (PFHxS) | 2.43 | Assign Peak | phomsopha t | 07/23/17 15:02 |

Lab Sample ID: IC 320-175476/8 Client Sample ID: _____

Date Analyzed: 07/23/17 13:44 Lab File ID: 2017.07.23ICAL_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|--------------------------------------|----------------|--------------------|----------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorohexanesulfonic acid (PFHxS) | 2.43 | Assign Peak | phomsopha t | 07/23/17 15:04 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 175528

Lab Sample ID: 320-29732-1 Client Sample ID: TP-PFC-019-TPI

Date Analyzed: 07/23/17 16:16 Lab File ID: 2017.07.23A_016.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorobutanoic acid (PFBA) | 1.56 | Baseline | chandrase nas | 07/24/17 12:59 |
| Perfluorooctanoic acid (PFOA) | 2.76 | Isomers | chandrase nas | 07/24/17 12:59 |

Lab Sample ID: 320-29732-3 Client Sample ID: TP-PFC-019-TPE

Date Analyzed: 07/23/17 16:30 Lab File ID: 2017.07.23A_018.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanoic acid (PFOA) | 2.76 | Isomers | chandrase nas | 07/24/17 13:01 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 175631

Lab Sample ID: CCVL 320-175631/2 Client Sample ID: _____

Date Analyzed: 07/24/17 11:42 Lab File ID: 2017.07.24A_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorotetradecanoic acid (PFTeA) | 4.66 | Baseline | chandrase nas | 07/24/17 13:21 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 175757

Lab Sample ID: 320-29732-1 DL Client Sample ID: TP-PFC-019-TPI DL

Date Analyzed: 07/24/17 20:07 Lab File ID: 2017.07.24AA_029.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanoic acid (PFOA) | 2.74 | Isomers | chandrase nas | 07/25/17 11:27 |

Lab Sample ID: 320-29732-2 Client Sample ID: TP-PFC-019-MID-CARBON

Date Analyzed: 07/24/17 20:14 Lab File ID: 2017.07.24AA_030.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluoroheptanoic acid (PFHpA) | 2.37 | Baseline | chandrase nas | 07/25/17 11:29 |
| Perfluorooctanoic acid (PFOA) | 2.74 | Isomers | chandrase nas | 07/25/17 11:28 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 175951

Lab Sample ID: MB 320-175074/1-A Client Sample ID: _____

Date Analyzed: 07/25/17 14:17 Lab File ID: 2017.07.25B_002.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorotetradecanoic acid (PFTeA) | 4.62 | Baseline | chandrase nas | 07/26/17 11:05 |

Lab Sample ID: 320-29732-1 RE Client Sample ID: TP-PFC-019-TPI RE

Date Analyzed: 07/25/17 15:05 Lab File ID: 2017.07.25B_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorotetradecanoic acid (PFTeA) | 4.64 | Baseline | chandrase nas | 07/26/17 11:30 |

Lab Sample ID: 320-29732-2 RE Client Sample ID: TP-PFC-019-MID-CARBON RE

Date Analyzed: 07/25/17 15:12 Lab File ID: 2017.07.25B_010.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorotetradecanoic acid (PFTeA) | 4.63 | Baseline | chandrase nas | 07/26/17 11:28 |

Lab Sample ID: 320-29732-3 RE Client Sample ID: TP-PFC-019-TPE RE

Date Analyzed: 07/25/17 15:19 Lab File ID: 2017.07.25B_011.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorotetradecanoic acid (PFTeA) | 4.64 | Baseline | chandrase nas | 07/26/17 11:29 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 176352

Lab Sample ID: CCVL 320-176352/3 Client Sample ID: _____

Date Analyzed: 07/27/17 12:19 Lab File ID: 2017.07.27A_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|--------------------|---------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorotetradecanoic acid (PFTeA) | 4.72 | Baseline | chandrase nas | 07/27/17 14:51 |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------------|----------|-----------|---|----------------------|---------------------|--------------|--------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| LCM2-4:2FTSIC 00002 | 08/06/17 | 05/26/17 | MeOH/H2O, Lot 09285 | 5000 uL | LCPFC-IS 00002 | 1000 uL | 13C2-PFOA | 50 ng/mL |
| .LCPFC-IS 00002 | 11/24/17 | 05/24/17 | Methanol, Lot 090285 | 30000 uL | LCM2PFOA 00006 | 150 uL | 13C2-PFOA | 0.25 ug/mL |
| ..LCM2PFOA 00006 | 02/12/21 | | Wellington Laboratories, Lot M2PFOA0216 | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL |
| LCMPFC_ALL_SU_00004 | 01/20/18 | 07/20/17 | Methanol, Lot Baker 141039 | 200 mL | LCd-NEtFOSA-M_00005 | 200 uL | d-N-EtFOSA-M | 0.05 ug/mL |
| | | | | | LCd-NMeFOSA-M 00004 | 200 uL | d-N-MeFOSA-M | 0.05 ug/mL |
| | | | | | LCd3-NMeFOSAA 00004 | 200 uL | d3-NMeFOSAA | 0.05 ug/mL |
| | | | | | LCd5-NEtFOSAA 00004 | 200 uL | d5-NEtFOSAA | 0.05 ug/mL |
| | | | | | LCM2-6:FTS 00004 | 200 uL | M2-6:2FTS | 0.0475 ug/mL |
| | | | | | LCM2-8:2FTS 00004 | 200 uL | M2-8:2FTS | 0.0479 ug/mL |
| | | | | | LCM2PFHxDA 00010 | 200 uL | 13C2-PFHxDA | 0.05 ug/mL |
| | | | | | LCM2PFTeDA 00009 | 200 uL | 13C2-PFTeDA | 0.05 ug/mL |
| | | | | | LCM4PFHPA 00009 | 200 uL | 13C4-PFHpa | 0.05 ug/mL |
| | | | | | LCM5PFPEA 00010 | 200 uL | 13C5 PFPeA | 0.05 ug/mL |
| | | | | | LCM8FOSA 00013 | 200 uL | 13C8 FOSA | 0.05 ug/mL |
| | | | | | LCMPFBA 00010 | 200 uL | 13C4 PFBA | 0.05 ug/mL |
| | | | | | LCMPFBS 00003 | 200 uL | 13C3-PFBS | 0.0465 ug/mL |
| | | | | | LCMPFDA 00015 | 200 uL | 13C2 PFDA | 0.05 ug/mL |
| | | | | | LCMPFDoA 00010 | 200 uL | 13C2 PFDoA | 0.05 ug/mL |
| | | | | | LCMPFHxA 00016 | 200 uL | 13C2 PFHxA | 0.05 ug/mL |
| | | | | | LCMPFHxS 00010 | 200 uL | 18O2 PFHxS | 0.0473 ug/mL |
| | | | | | LCMPFNA 00010 | 200 uL | 13C5 PFNA | 0.05 ug/mL |
| | | | | | LCMPFOA 00014 | 200 uL | 13C4 PFOA | 0.05 ug/mL |
| | | | | | LCMPFOS 00022 | 200 uL | 13C4 PFOS | 0.0478 ug/mL |
| | | | | | LCMPFUDa 00011 | 200 uL | 13C2 PFUnA | 0.05 ug/mL |
| .LCd-NEtFOSA-M 00005 | 06/10/21 | | WELLINGTON, Lot dNEtFOSA0616M | | (Purchased Reagent) | | d-N-EtFOSA-M | 50 ug/mL |
| .LCd-NMeFOSA-M 00004 | 06/10/21 | | WELLINGTON, Lot dNMeFOSA0616M | | (Purchased Reagent) | | d-N-MeFOSA-M | 50 ug/mL |
| .LCd3-NMeFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d3NMeFOSAA1116 | | (Purchased Reagent) | | d3-NMeFOSAA | 50 ug/mL |
| .LCd5-NEtFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d5NEtFOSAA1116 | | (Purchased Reagent) | | d5-NEtFOSAA | 50 ug/mL |
| .LCM2-6:FTS 00004 | 02/17/22 | | WELLINGTON, Lot M262FTS0217 | | (Purchased Reagent) | | M2-6:2FTS | 47.5 ug/mL |
| .LCM2-8:2FTS 00004 | 08/22/21 | | WELLINGTON, Lot M282FTS0816 | | (Purchased Reagent) | | M2-8:2FTS | 47.9 ug/mL |
| .LCM2PFHxDA 00010 | 01/07/21 | | Wellington Laboratories, Lot M2PFHxDA1112 | | (Purchased Reagent) | | 13C2-PFHxDA | 50 ug/mL |
| .LCM2PFTeDA 00009 | 12/07/20 | | Wellington Laboratories, Lot M2PFTeDA0217 | | (Purchased Reagent) | | 13C2-PFTeDA | 50 ug/mL |
| .LCM4PFHPA 00009 | 05/27/21 | | Wellington Laboratories, Lot M4PFHpa0516 | | (Purchased Reagent) | | 13C4-PFHpa | 50 ug/mL |
| .LCM5PFPEA 00010 | 11/22/21 | | Wellington Laboratories, Lot M5PFPeA1116 | | (Purchased Reagent) | | 13C5 PFPeA | 50 ug/mL |
| .LCM8FOSA 00013 | 12/22/20 | | Wellington Laboratories, Lot M8FOSA1215I | | (Purchased Reagent) | | 13C8 FOSA | 50 ug/mL |
| .LCMPFBA 00010 | 05/24/21 | | Wellington Laboratories, Lot MPFBA0516 | | (Purchased Reagent) | | 13C4 PFBA | 50 ug/mL |
| .LCMPFBS 00003 | 08/02/21 | | Wellington Laboratories, Lot M3PFBS0815 | | (Purchased Reagent) | | 13C3-PFBS | 46.5 ug/mL |
| .LCMPFDA 00015 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| .LCMPFDoA 00010 | 04/08/21 | | Wellington Laboratories, Lot MPFDoA0416 | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL |
| .LCMPFHxA 00016 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| .LCMPFHxS 00010 | 02/17/22 | | Wellington Laboratories, Lot MPFHxS0217 | | (Purchased Reagent) | | 18O2 PFHxS | 47.3 ug/mL |
| .LCMPFNA 00010 | 09/30/21 | | Wellington Laboratories, Lot MPFNA0916 | | (Purchased Reagent) | | 13C5 PFNA | 50 ug/mL |
| .LCMPFOA 00014 | 04/12/22 | | Wellington Laboratories, Lot MPFOA0417 | | (Purchased Reagent) | | 13C4 PFOA | 50 ug/mL |
| .LCMPFOS 00022 | 12/12/21 | | Wellington Laboratories, Lot MPFOS1216 | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| .LCMPFUDa 00011 | 11/22/21 | | Wellington Laboratories, Lot MPFUDa1116 | | (Purchased Reagent) | | 13C2 PFUnA | 50 ug/mL |
| LCMPFC2SU_00025 | 01/07/18 | 07/07/17 | Methanol, Lot 104453 | 200 mL | LCd-NEtFOSA-M_00005 | 200 uL | d-N-EtFOSA-M | 0.05 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------------|----------|-----------|---|----------------------|---------------------|--------------|--------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCd-NMeFOSA-M 00004 | 200 uL | d-N-MeFOSA-M | 0.05 ug/mL |
| | | | | | LCd3-NMeFOSAA 00004 | 200 uL | d3-NMeFOSAA | 0.05 ug/mL |
| | | | | | LCd5-NEtFOSAA 00004 | 200 uL | d5-NEtFOSAA | 0.05 ug/mL |
| | | | | | LCM2-6:FtS 00002 | 200 uL | M2-6:2FtS | 0.0475 ug/mL |
| | | | | | LCM2-8:2FtS 00002 | 200 uL | M2-8:2FtS | 0.0479 ug/mL |
| .LCd-NEtFOSA-M 00005 | 06/10/21 | | WELLINGTON, Lot dNetFOSA0616M | | (Purchased Reagent) | | d-N-EtFOSA-M | 50 ug/mL |
| .LCd-NMeFOSA-M 00004 | 06/10/21 | | WELLINGTON, Lot dNMeFOSA0616M | | (Purchased Reagent) | | d-N-MeFOSA-M | 50 ug/mL |
| .LCd3-NMeFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d3NMeFOSAA1116 | | (Purchased Reagent) | | d3-NMeFOSAA | 50 ug/mL |
| .LCd5-NEtFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d5NetFOSAA1116 | | (Purchased Reagent) | | d5-NEtFOSAA | 50 ug/mL |
| .LCM2-6:FtS 00002 | 01/08/21 | | WELLINGTON, Lot M262FtS0116 | | (Purchased Reagent) | | M2-6:2FtS | 47.5 ug/mL |
| .LCM2-8:2FtS 00002 | 01/08/21 | | WELLINGTON, Lot M282FtS0116 | | (Purchased Reagent) | | M2-8:2FtS | 47.9 ug/mL |
| LCMPFCSU_00081 | 12/26/17 | 06/26/17 | Methanol, Lot Baker 141039 | 200 mL | LCM2PFHxDA_00010 | 200 uL | 13C2-PFHxDA | 0.05 ug/mL |
| | | | | | LCM2PFtEDA 00009 | 200 uL | 13C2-PFtEDA | 0.05 ug/mL |
| | | | | | LCM4PFHPA 00009 | 200 uL | 13C4-PFHpa | 0.05 ug/mL |
| | | | | | LCM5PFPEA 00010 | 200 uL | 13C5 PFPeA | 0.05 ug/mL |
| | | | | | LCM8FOSA 00013 | 200 uL | 13C8 FOSA | 0.05 ug/mL |
| | | | | | LCMPFBA 00010 | 200 uL | 13C4 PFBA | 0.05 ug/mL |
| | | | | | LCMPFBS 00002 | 200 uL | 13C3-PFBS | 0.0465 ug/mL |
| | | | | | LCMPFDA 00015 | 200 uL | 13C2 PFDA | 0.05 ug/mL |
| | | | | | LCMPFDoA 00010 | 200 uL | 13C2 PFDoA | 0.05 ug/mL |
| | | | | | LCMPFHxA 00016 | 200 uL | 13C2 PFHxA | 0.05 ug/mL |
| | | | | | LCMPFHxS 00010 | 200 uL | 18O2 PFHxS | 0.0473 ug/mL |
| | | | | | LCMPFNA 00010 | 200 uL | 13C5 PFNA | 0.05 ug/mL |
| | | | | | LCMPFOA 00014 | 200 uL | 13C4 PFOA | 0.05 ug/mL |
| | | | | | LCMPFOS 00022 | 200 uL | 13C4 PFOS | 0.0478 ug/mL |
| | | | | | LCMPFUdA 00011 | 200 uL | 13C2 PFUnA | 0.05 ug/mL |
| .LCM2PFHxDA 00010 | 01/07/21 | | Wellington Laboratories, Lot M2PFHxDA1112 | | (Purchased Reagent) | | 13C2-PFHxDA | 50 ug/mL |
| .LCM2PFtEDA 00009 | 12/07/20 | | Wellington Laboratories, Lot M2PFtEDA0217 | | (Purchased Reagent) | | 13C2-PFtEDA | 50 ug/mL |
| .LCM4PFHPA 00009 | 05/27/21 | | Wellington Laboratories, Lot M4PFHpa0516 | | (Purchased Reagent) | | 13C4-PFHpa | 50 ug/mL |
| .LCM5PFPEA 00010 | 11/22/21 | | Wellington Laboratories, Lot M5PFPeA1116 | | (Purchased Reagent) | | 13C5 PFPeA | 50 ug/mL |
| .LCM8FOSA 00013 | 12/22/20 | | Wellington Laboratories, Lot M8FOSA1215I | | (Purchased Reagent) | | 13C8 FOSA | 50 ug/mL |
| .LCMPFBA 00010 | 05/24/21 | | Wellington Laboratories, Lot MPFBA0516 | | (Purchased Reagent) | | 13C4 PFBA | 50 ug/mL |
| .LCMPFBS 00002 | 08/02/21 | | Wellington Laboratories, Lot M3PFBS0815 | | (Purchased Reagent) | | 13C3-PFBS | 46.5 ug/mL |
| .LCMPFDA 00015 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| .LCMPFDoA 00010 | 04/08/21 | | Wellington Laboratories, Lot MPFDoA0416 | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL |
| .LCMPFHxA 00016 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| .LCMPFHxS 00010 | 02/17/22 | | Wellington Laboratories, Lot MPFHxS0217 | | (Purchased Reagent) | | 18O2 PFHxS | 47.3 ug/mL |
| .LCMPFNA 00010 | 09/30/21 | | Wellington Laboratories, Lot MPFNA0916 | | (Purchased Reagent) | | 13C5 PFNA | 50 ug/mL |
| .LCMPFOA 00014 | 04/12/22 | | Wellington Laboratories, Lot MPFOA0417 | | (Purchased Reagent) | | 13C4 PFOA | 50 ug/mL |
| .LCMPFOS 00022 | 12/12/21 | | Wellington Laboratories, Lot MPFOS1216 | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| .LCMPFUdA 00011 | 11/22/21 | | Wellington Laboratories, Lot MPFUdA1116 | | (Purchased Reagent) | | 13C2 PFUnA | 50 ug/mL |
| LCPFC_FULL-L1_00005 | 12/27/17 | 07/07/17 | MeOH/H2O, Lot 90285 | 5000 uL | LCMPFC_ALL_SU_00001 | 250 uL | d-N-EtFOSA-M | 50 ng/mL |
| | | | | | | | d-N-MeFOSA-M | 50 ng/mL |
| | | | | | | | d3-NMeFOSAA | 50 ng/mL |
| | | | | | | | d5-NEtFOSAA | 50 ng/mL |
| | | | | | | | M2-6:2FtS | 47.5 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|------------|----------|-----------|---------------|----------------------|--------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | M2-8:2FTS | 47.9 ng/mL |
| | | | | | | | 13C2-PFHxDA | 50 ng/mL |
| | | | | | | | 13C2-PFTeDA | 50 ng/mL |
| | | | | | | | 13C4-PFHpA | 50 ng/mL |
| | | | | | | | 13C5 PFPeA | 50 ng/mL |
| | | | | | | | 13C8 FOSA | 50 ng/mL |
| | | | | | | | 13C4 PFBA | 50 ng/mL |
| | | | | | | | 13C2 PFDA | 50 ng/mL |
| | | | | | | | 13C2 PFDoA | 50 ng/mL |
| | | | | | | | 13C2 PFHxA | 50 ng/mL |
| | | | | | | | 18O2 PFHxS | 47.3 ng/mL |
| | | | | | | | 13C5 PFNA | 50 ng/mL |
| | | | | | | | 13C4 PFOA | 50 ng/mL |
| | | | | | | | 13C4 PFOS | 47.8 ng/mL |
| | | | | | | | 13C2 PFUnA | 50 ng/mL |
| | | | | | LCPFC_ALL_SP_00001 | 25 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.467 ng/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.474 ng/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.479 ng/mL |
| | | | | | | | N-ethylperfluoro-1-octanesulfoamide | 0.5 ng/mL |
| | | | | | | | N-ethyl perfluorooctane sulfonamidoacetic acid | 0.5 ng/mL |
| | | | | | | | MeFOSA | 0.5 ng/mL |
| | | | | | | | N-methyl perfluorooctane sulfonamidoacetic acid | 0.5 ng/mL |
| | | | | | | | Perfluorobutanoic acid (PFBA) | 0.5 ng/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 0.442 ng/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 0.5 ng/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 0.5 ng/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 0.482 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 0.5 ng/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 0.476 ng/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 0.5 ng/mL |
| | | | | | | | Perfluorohexadecanoic acid | 0.5 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 0.455 ng/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 0.5 ng/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 0.5 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|---|----------------------|---------------------|--------------|-------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Perfluorooctadecanoic acid | 0.5 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 0.464 ng/mL |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 0.5 ng/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 0.5 ng/mL |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 0.5 ng/mL |
| | | | | | | | Perfluorotridecanoic Acid (PFTriA) | 0.5 ng/mL |
| | | | | | | | Perfluoroundecanoic acid (PFUnA) | 0.5 ng/mL |
| | | | | | LCPFCIS 00003 | 50 uL | 13C2-PFOA | 50 ng/mL |
| ..LCMPFC_ALL_SU_00001 | 12/29/17 | 06/29/17 | Methanol, Lot Baker 141039 | 10000 uL | Lcd-NEtFOSA-M_00005 | 200 uL | d-N-EtFOSA-M | 1 ug/mL |
| | | | | | Lcd-NMeFOSA-M 00004 | 200 uL | d-N-MeFOSA-M | 1 ug/mL |
| | | | | | LCd3-NMeFOSAA 00004 | 200 uL | d3-NMeFOSAA | 1 ug/mL |
| | | | | | LCd5-NEtFOSAA 00004 | 200 uL | d5-NEtFOSAA | 1 ug/mL |
| | | | | | LCM2-6:FTS 00004 | 200 uL | M2-6:2FTS | 0.95 ug/mL |
| | | | | | LCM2-8:2FTS 00004 | 200 uL | M2-8:2FTS | 0.958 ug/mL |
| | | | | | LCM2PFHxDA 00010 | 200 uL | 13C2-PFHxDA | 1 ug/mL |
| | | | | | LCM2PFTeDA 00009 | 200 uL | 13C2-PFTeDA | 1 ug/mL |
| | | | | | LCM4PFHPA 00009 | 200 uL | 13C4-PFHpa | 1 ug/mL |
| | | | | | LCM5PFPEA 00010 | 200 uL | 13C5 PFPeA | 1 ug/mL |
| | | | | | LCM8FOSA 00013 | 200 uL | 13C8 FOSA | 1 ug/mL |
| | | | | | LCMPFBA 00010 | 200 uL | 13C4 PFBA | 1 ug/mL |
| | | | | | LCMPFDA 00015 | 200 uL | 13C2 PFDA | 1 ug/mL |
| | | | | | LCMPFDoA 00010 | 200 uL | 13C2 PFDoA | 1 ug/mL |
| | | | | | LCMPFHxA 00016 | 200 uL | 13C2 PFHxA | 1 ug/mL |
| | | | | | LCMPFHxS 00010 | 200 uL | 18O2 PFHxS | 0.946 ug/mL |
| | | | | | LCMPFNA 00010 | 200 uL | 13C5 PFNA | 1 ug/mL |
| | | | | | LCMPFOA 00014 | 200 uL | 13C4 PFOA | 1 ug/mL |
| | | | | | LCMPFOS 00022 | 200 uL | 13C4 PFOS | 0.956 ug/mL |
| | | | | | LCMPFUDa 00011 | 200 uL | 13C2 PFUnA | 1 ug/mL |
| ..LCd-NEtFOSA-M 00005 | 06/10/21 | | WELLINGTON, Lot dNetFOSA0616M | | (Purchased Reagent) | | d-N-EtFOSA-M | 50 ug/mL |
| ..LCd-NMeFOSA-M 00004 | 06/10/21 | | WELLINGTON, Lot dNMeFOSA0616M | | (Purchased Reagent) | | d-N-MeFOSA-M | 50 ug/mL |
| ..LCd3-NMeFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d3NMeFOSAA1116 | | (Purchased Reagent) | | d3-NMeFOSAA | 50 ug/mL |
| ..LCd5-NEtFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d5NetFOSAA1116 | | (Purchased Reagent) | | d5-NEtFOSAA | 50 ug/mL |
| ..LCM2-6:FTS 00004 | 02/17/22 | | WELLINGTON, Lot M262FTS0217 | | (Purchased Reagent) | | M2-6:2FTS | 47.5 ug/mL |
| ..LCM2-8:2FTS 00004 | 08/22/21 | | WELLINGTON, Lot M282FTS0816 | | (Purchased Reagent) | | M2-8:2FTS | 47.9 ug/mL |
| ..LCM2PFHxDA 00010 | 01/07/21 | | Wellington Laboratories, Lot M2PFHxDA1112 | | (Purchased Reagent) | | 13C2-PFHxDA | 50 ug/mL |
| ..LCM2PFTeDA 00009 | 12/07/20 | | Wellington Laboratories, Lot M2PFTeDA0217 | | (Purchased Reagent) | | 13C2-PFTeDA | 50 ug/mL |
| ..LCM4PFHPA 00009 | 05/27/21 | | Wellington Laboratories, Lot M4PFHpA0516 | | (Purchased Reagent) | | 13C4-PFHpa | 50 ug/mL |
| ..LCM5PFPEA 00010 | 11/22/21 | | Wellington Laboratories, Lot M5PFPeA1116 | | (Purchased Reagent) | | 13C5 PFPeA | 50 ug/mL |
| ..LCM8FOSA 00013 | 12/22/20 | | Wellington Laboratories, Lot M8FOSA1215I | | (Purchased Reagent) | | 13C8 FOSA | 50 ug/mL |
| ..LCMPFBA 00010 | 05/24/21 | | Wellington Laboratories, Lot MPFBA0516 | | (Purchased Reagent) | | 13C4 PFBA | 50 ug/mL |
| ..LCMPFDA 00015 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| ..LCMPFDoA 00010 | 04/08/21 | | Wellington Laboratories, Lot MPFDoA0416 | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---------------------|----------|-----------|---|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCMPFHxA 00016 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| ..LCMPFHxS 00010 | 02/17/22 | | Wellington Laboratories, Lot MPFHxS0217 | | (Purchased Reagent) | | 1802 PFHxS | 47.3 ug/mL |
| ..LCMPFNA 00010 | 09/30/21 | | Wellington Laboratories, Lot MPFNA0916 | | (Purchased Reagent) | | 13C5 PFNA | 50 ug/mL |
| ..LCMPFOA 00014 | 04/12/22 | | Wellington Laboratories, Lot MPFOA0417 | | (Purchased Reagent) | | 13C4 PFOA | 50 ug/mL |
| ..LCMPFOS 00022 | 12/12/21 | | Wellington Laboratories, Lot MPFOS1216 | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| ..LCMPFUDa 00011 | 11/22/21 | | Wellington Laboratories, Lot MPFUDa1116 | | (Purchased Reagent) | | 13C2 PFUnA | 50 ug/mL |
| .LCPFC_ALL_SP_00001 | 12/27/17 | 07/07/17 | Methanol, Lot 157237 | 10000 uL | LCPFC2SP_00037 | 1000 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.0934 ug/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.0948 ug/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.0958 ug/mL |
| | | | | | | | N-ethylperfluoro-1-octanesulfo namide | 0.1 ug/mL |
| | | | | | | | N-ethyl perfluorooctane sulfonamidoacetic acid | 0.1 ug/mL |
| | | | | | | | MeFOSA | 0.1 ug/mL |
| | | | | | | | N-methyl perfluorooctane sulfonamidoacetic acid | 0.1 ug/mL |
| | | | | | LCPFCSP_00103 | 1000 uL | Perfluorobutanoic acid (PFBA) | 0.1 ug/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 0.0884 ug/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 0.1 ug/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 0.1 ug/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 0.0964 ug/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 0.1 ug/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 0.0952 ug/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 0.1 ug/mL |
| | | | | | | | Perfluorohexadecanoic acid | 0.1 ug/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 0.091 ug/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 0.1 ug/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 0.1 ug/mL |
| | | | | | | | Perfluorooctadecanoic acid | 0.1 ug/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 0.0928 ug/mL |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 0.1 ug/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 0.1 ug/mL |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 0.1 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|------------------------------|----------------------|--------------------|---------------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Perfluorotridecanoic Acid (PFTriA) | 0.1 ug/mL |
| | | | | | | | Perfluoroundecanoic acid (PFUnA) | 0.1 ug/mL |
| ..LCPFC2SP_00037 | 01/07/18 | 07/07/17 | Methanol, Lot 104453 | 10 mL | LC4:2FTS_00002 | 200 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.934 ug/mL |
| | | | | | LC6:2FTS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL |
| | | | | | LC8:2FTS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.958 ug/mL |
| | | | | | LCN-EtFOSA-M_00004 | 200 uL | N-ethylperfluoro-1-octanesulfo namide | 1 ug/mL |
| | | | | | LCN-EtFOSAA_00002 | 200 uL | N-ethyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| | | | | | LCN-MeFOSA-M_00003 | 200 uL | MeFOSA | 1 ug/mL |
| | | | | | LCN-MeFOSAA_00003 | 200 uL | N-methyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| ...LC4:2FTS_00002 | 12/12/21 | | WELLINGTON, Lot 42FTS1216 | | | (Purchased Reagent) | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 46.7 ug/mL |
| ...LC6:2FTS_00003 | 06/25/21 | | WELLINGTON, Lot 62FTS0616 | | | (Purchased Reagent) | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL |
| ...LC8:2FTS_00003 | 08/22/21 | | WELLINGTON, Lot 82FTS0816 | | | (Purchased Reagent) | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 47.9 ug/mL |
| ...LCN-EtFOSA-M_00004 | 05/24/21 | | WELLINGTON, Lot NETFOSA0516M | | | (Purchased Reagent) | N-ethylperfluoro-1-octanesulfo namide | 50 ug/mL |
| ...LCN-EtFOSAA_00002 | 01/20/21 | | WELLINGTON, Lot NETFOSAA0116 | | | (Purchased Reagent) | N-ethyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ...LCN-MeFOSA-M_00003 | 05/24/21 | | WELLINGTON, Lot NMeFOSA0516M | | | (Purchased Reagent) | MeFOSA | 50 ug/mL |
| ...LCN-MeFOSAA_00003 | 01/20/21 | | WELLINGTON, Lot NMeFOSAA0116 | | | (Purchased Reagent) | N-methyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ..LCPFCSP_00103 | 12/27/17 | 06/27/17 | Methanol, Lot 090285 | 10000 uL | LCPFBA_00006 | 200 uL | Perfluorobutanoic acid (PFBA) | 1 ug/mL |
| | | | | | LCPFBS_00006 | 200 uL | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL |
| | | | | | LCPFDA_00006 | 200 uL | Perfluorodecanoic acid (PFDA) | 1 ug/mL |
| | | | | | LCPFDoA_00006 | 200 uL | Perfluorododecanoic acid (PFDoA) | 1 ug/mL |
| | | | | | LCPFDS_00005 | 200 uL | Perfluorodecanesulfonic acid (PFDS) | 0.964 ug/mL |
| | | | | | LCPFHpA_00006 | 200 uL | Perfluoroheptanoic acid (PFHpA) | 1 ug/mL |
| | | | | | LCPFHpS_00010 | 200 uL | Perfluoroheptanesulfonic Acid (PFHpS) | 0.952 ug/mL |
| | | | | | LCPFHxA_00005 | 200 uL | Perfluorohexanoic acid (PFHxA) | 1 ug/mL |
| | | | | | LCPFHxDA_00007 | 200 uL | Perfluorohexadecanoic acid | 1 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---------------------|----------|---|---------------------|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCPFHxS-br_00003 | 200 uL | Perfluorohexanesulfonic acid (PFHxS) | 0.91 ug/mL |
| | | | | | LCPFNA_00007 | 200 uL | Perfluorononanoic acid (PFNA) | 1 ug/mL |
| | | | | | LCPFOA_00007 | 200 uL | Perfluorooctanoic acid (PFOA) | 1 ug/mL |
| | | | | | LCPFODA_00007 | 200 uL | Perfluorooctadecanoic acid | 1 ug/mL |
| | | | | | LCPFOS-br_00003 | 200 uL | Perfluorooctanesulfonic acid (PFOS) | 0.928 ug/mL |
| | | | | | LCPFOSA_00010 | 200 uL | Perfluorooctane Sulfonamide (FOSA) | 1 ug/mL |
| | | | | | LCPFPeA_00006 | 200 uL | Perfluoropentanoic acid (PFPeA) | 1 ug/mL |
| | | | | | LCPFTeDA_00005 | 200 uL | Perfluorotetradecanoic acid (PFTeA) | 1 ug/mL |
| | | | | | LCPFTrDA_00005 | 200 uL | Perfluorotridecanoic Acid (PFTriA) | 1 ug/mL |
| | | | | | LCPFUdA_00006 | 200 uL | Perfluoroundecanoic acid (PFUnA) | 1 ug/mL |
| ...LCPFBA_00006 | 05/27/21 | Wellington Laboratories, Lot PFBA0516 | | | (Purchased Reagent) | | Perfluorobutanoic acid (PFBA) | 50 ug/mL |
| ...LCPFBS_00006 | 03/15/21 | Wellington Laboratories, Lot LPFBS0316 | | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ...LCPFDA_00006 | 05/31/21 | Wellington Laboratories, Lot PFDA0516 | | | (Purchased Reagent) | | Perfluorodecanoic acid (PFDA) | 50 ug/mL |
| ...LCPFDoA_00006 | 05/31/21 | Wellington Laboratories, Lot PFDoA0516 | | | (Purchased Reagent) | | Perfluorododecanoic acid (PFDoA) | 50 ug/mL |
| ...LCPFDS_00005 | 07/02/20 | Wellington Laboratories, Lot LPFDS0615 | | | (Purchased Reagent) | | Perfluorodecanesulfonic acid (PFDS) | 48.2 ug/mL |
| ...LCPFHpA_00006 | 01/22/21 | Wellington Laboratories, Lot PFHpA0116 | | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| ...LCPFHpS_00010 | 11/06/20 | Wellington Laboratories, Lot LPFHps1115 | | | (Purchased Reagent) | | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ug/mL |
| ...LCPFHxA_00005 | 12/22/20 | Wellington Laboratories, Lot PFHxA1215 | | | (Purchased Reagent) | | Perfluorohexanoic acid (PFHxA) | 50 ug/mL |
| ...LCPFHxDA_00007 | 05/25/21 | Wellington Laboratories, Lot PFHxDA0516 | | | (Purchased Reagent) | | Perfluorohexadecanoic acid | 50 ug/mL |
| ...LCPFHxS-br_00003 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 | | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ...LCPFNA_00007 | 10/23/20 | Wellington Laboratories, Lot PFNA1015 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ...LCPFOA_00007 | 08/02/21 | Wellington Laboratories, Lot PFOA0716 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| ...LCPFODA_00007 | 04/29/21 | Wellington Laboratories, Lot PFODA0416 | | | (Purchased Reagent) | | Perfluorooctadecanoic acid | 50 ug/mL |
| ...LCPFOS-br_00003 | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015 | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| ...LCPFOSA_00010 | 09/30/21 | Wellington Laboratories, Lot FOSA0916I | | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| ...LCPFPeA_00006 | 05/31/21 | Wellington Laboratories, Lot PFPeA0516 | | | (Purchased Reagent) | | Perfluoropentanoic acid (PFPeA) | 50 ug/mL |
| ...LCPFTeDA_00005 | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215 | | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| ...LCPFTrDA_00005 | 02/12/21 | Wellington Laboratories, Lot PFTTrDA0216 | | | (Purchased Reagent) | | Perfluorotridecanoic Acid (PFTriA) | 50 ug/mL |
| ...LCPFUdA_00006 | 08/19/20 | Wellington Laboratories, Lot PFUdA0815 | | | (Purchased Reagent) | | Perfluoroundecanoic acid (PFUnA) | 50 ug/mL |
| .LCPFCIS_00003 | 12/30/17 | 06/30/17 | Methanol, Lot 14139 | 5000 uL | LCM2PFOA_00005 | 500 uL | 13C2-PFOA | 5 ug/mL |
| ..LCM2PFOA_00005 | 06/19/18 | Wellington Laboratories, Lot M2PFOA0613 | | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-------------------------------------|----------|-----------|----------------------|----------------------|-----------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| LCPFCL2-FULL-L2_00004 | 09/02/17 | 05/30/17 | MeOH/H2O, Lot 090285 | 5 mL | LCMPFC2SU_00019 | 250 uL | d-N-EtFOSA-M | 50 ng/mL |
| | | | | | | | d-N-MeFOSA-M | 50 ng/mL |
| | | | | | | | d3-NMeFOSAA | 50 ng/mL |
| | | | | | | | d5-NEtFOSAA | 50 ng/mL |
| | | | | | | | M2-6:2FTS | 47.5 ng/mL |
| | | | | | M2-8:2FTS | 47.9 ng/mL | | |
| | | | | | LCMPFCSU_00069 | 250 uL | 13C2-PFHxDA | 50 ng/mL |
| | | | | | | | 13C2-PFTeDA | 50 ng/mL |
| | | | | | | | 13C4-PFHpA | 50 ng/mL |
| | | | | | | | 13C5 PFPeA | 50 ng/mL |
| | | | | | | | 13C8 FOSA | 50 ng/mL |
| | | | | | | | 13C4 PFBA | 50 ng/mL |
| | | | | | | | 13C2 PFDA | 50 ng/mL |
| | | | | | | | 13C2 PFDoA | 50 ng/mL |
| | | | | | | | 13C2 PFHxA | 50 ng/mL |
| | | | | | | | 18O2 PFHxS | 47.3 ng/mL |
| | | | | | | | 13C5 PFNA | 50 ng/mL |
| | | | | | | | 13C4 PFOA | 50 ng/mL |
| | | | | | | | 13C4 PFOS | 47.8 ng/mL |
| | | | | | LCPFCL2-FULL-L2_00004 | 50 uL | Perfluorobutanoic acid (PFBA) | 1 ng/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 0.884 ng/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 1 ng/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 1 ng/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 0.964 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 1 ng/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 0.952 ng/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 1 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 0.91 ng/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 1 ng/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 1 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 0.928 ng/mL |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 1 ng/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 1 ng/mL |
| Perfluorotetradecanoic acid (PFTeA) | 1 ng/mL | | | | | | | |
| Perfluorotridecanoic Acid (PFTriA) | 1 ng/mL | | | | | | | |
| Perfluoroundecanoic acid (PFUnA) | 1 ng/mL | | | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|------------|---|----------------------|---------------------|--------------|-------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| .LCMPFC2SU_00019 | 11/30/17 | 05/30/17 | Methanol, Lot 104453 | 5000 uL | LCd-NEtFOSA-M 00005 | 100 uL | d-N-EtFOSA-M | 1 ug/mL |
| | | | | | LCd-NMeFOSA-M 00004 | 100 uL | d-N-MeFOSA-M | 1 ug/mL |
| | | | | | LCd3-NMeFOSAA 00004 | 100 uL | d3-NMeFOSAA | 1 ug/mL |
| | | | | | LCd5-NEtFOSAA 00004 | 100 uL | d5-NEtFOSAA | 1 ug/mL |
| | | | | | LCM2-6:FtS 00004 | 100 uL | M2-6:2FtS | 0.95 ug/mL |
| | | | | | LCM2-8:2FtS 00004 | 100 uL | M2-8:2FtS | 0.958 ug/mL |
| ..LCd-NEtFOSA-M 00005 | 06/10/21 | | WELLINGTON, Lot dNEtFOSA0616M | | (Purchased Reagent) | | d-N-EtFOSA-M | 50 ug/mL |
| ..LCd-NMeFOSA-M 00004 | 06/10/21 | | WELLINGTON, Lot dNMeFOSA0616M | | (Purchased Reagent) | | d-N-MeFOSA-M | 50 ug/mL |
| ..LCd3-NMeFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d3NMeFOSAA1116 | | (Purchased Reagent) | | d3-NMeFOSAA | 50 ug/mL |
| ..LCd5-NEtFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d5NEtFOSAA1116 | | (Purchased Reagent) | | d5-NEtFOSAA | 50 ug/mL |
| ..LCM2-6:FtS 00004 | 02/17/22 | | WELLINGTON, Lot M262FtS0217 | | (Purchased Reagent) | | M2-6:2FtS | 47.5 ug/mL |
| ..LCM2-8:2FtS 00004 | 08/22/21 | | WELLINGTON, Lot M282FtS0816 | | (Purchased Reagent) | | M2-8:2FtS | 47.9 ug/mL |
| .LCMPFCSU_00069 | 11/24/17 | 05/24/17 | Methanol, Lot Baker 141039 | 10000 uL | LCM2PFHxDA_00009 | 200 uL | 13C2-PFHxDA | 1 ug/mL |
| | | | | | LCM2PFTeDA 00008 | 200 uL | 13C2-PFTeDA | 1 ug/mL |
| | | | | | LCM4PFHPA 00008 | 200 uL | 13C4-PFHpa | 1 ug/mL |
| | | | | | LCM5PFPEA 00009 | 200 uL | 13C5 PFPeA | 1 ug/mL |
| | | | | | LCM8FOSA 00012 | 200 uL | 13C8 FOSA | 1 ug/mL |
| | | | | | LCMPFBA 00009 | 200 uL | 13C4 PFBA | 1 ug/mL |
| | | | | | LCMPFDA 00013 | 200 uL | 13C2 PFDA | 1 ug/mL |
| | | | | | LCMPFDoA 00009 | 200 uL | 13C2 PFDoA | 1 ug/mL |
| | | | | | LCMPFHxA 00014 | 200 uL | 13C2 PFHxA | 1 ug/mL |
| | | | | | LCMPFHxS 00009 | 200 uL | 18O2 PFHxS | 0.946 ug/mL |
| | | | | | LCMPFNA 00009 | 200 uL | 13C5 PFNA | 1 ug/mL |
| | | | | | LCMPFOA 00013 | 200 uL | 13C4 PFOA | 1 ug/mL |
| | | | | | LCMPFOS 00020 | 200 uL | 13C4 PFOS | 0.956 ug/mL |
| LCMPFUdA 00010 | 200 uL | 13C2 PFUnA | 1 ug/mL | | | | | |
| ..LCM2PFHxDA 00009 | 01/07/21 | | Wellington Laboratories, Lot M2PFHxDA1112 | | (Purchased Reagent) | | 13C2-PFHxDA | 50 ug/mL |
| ..LCM2PFTeDA 00008 | 12/07/20 | | Wellington Laboratories, Lot M2PFTeDA1115 | | (Purchased Reagent) | | 13C2-PFTeDA | 50 ug/mL |
| ..LCM4PFHPA 00008 | 05/27/21 | | Wellington Laboratories, Lot M4PFHpa0516 | | (Purchased Reagent) | | 13C4-PFHpa | 50 ug/mL |
| ..LCM5PFPEA 00009 | 11/22/21 | | Wellington Laboratories, Lot M5PFPeA1116 | | (Purchased Reagent) | | 13C5 PFPeA | 50 ug/mL |
| ..LCM8FOSA 00012 | 12/22/20 | | Wellington Laboratories, Lot M8FOSA1215I | | (Purchased Reagent) | | 13C8 FOSA | 50 ug/mL |
| ..LCMPFBA 00009 | 05/24/21 | | Wellington Laboratories, Lot MPFBA0516 | | (Purchased Reagent) | | 13C4 PFBA | 50 ug/mL |
| ..LCMPFDA 00013 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| ..LCMPFDoA 00009 | 04/08/21 | | Wellington Laboratories, Lot MPFDoA0416 | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL |
| ..LCMPFHxA 00014 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| ..LCMPFHxS 00009 | 10/23/20 | | Wellington Laboratories, Lot MPFHxS1015 | | (Purchased Reagent) | | 18O2 PFHxS | 47.3 ug/mL |
| ..LCMPFNA 00009 | 09/30/21 | | Wellington Laboratories, Lot MPFNA0916 | | (Purchased Reagent) | | 13C5 PFNA | 50 ug/mL |
| ..LCMPFOA 00013 | 10/18/21 | | Wellington Laboratories, Lot MPFOA1016 | | (Purchased Reagent) | | 13C4 PFOA | 50 ug/mL |
| ..LCMPFOS 00020 | 12/12/21 | | Wellington Laboratories, Lot MPFOS1216 | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| ..LCMPFUdA 00010 | 11/22/21 | | Wellington Laboratories, Lot MPFUdA1116 | | (Purchased Reagent) | | 13C2 PFUnA | 50 ug/mL |
| .LCPFCSP_00097 | 09/02/17 | 05/30/17 | Methanol, Lot 157237 | 10000 uL | LCPFCSP_00096 | 1000 uL | Perfluorobutanoic acid (PFBA) | 0.1 ug/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 0.0884 ug/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 0.1 ug/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 0.1 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------|----------|-----------|----------------------|----------------------|------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 0.0964 ug/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 0.1 ug/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 0.0952 ug/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 0.1 ug/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 0.091 ug/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 0.1 ug/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 0.1 ug/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 0.0928 ug/mL |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 0.1 ug/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 0.1 ug/mL |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 0.1 ug/mL |
| | | | | | | | Perfluorotridecanoic Acid (PFTriA) | 0.1 ug/mL |
| | | | | | | | Perfluoroundecanoic acid (PFUnA) | 0.1 ug/mL |
| ..LCPFCSP_00096 | 09/02/17 | 05/24/17 | Methanol, Lot 090285 | 10000 uL | LCPFBA_00006 | 200 uL | Perfluorobutanoic acid (PFBA) | 1 ug/mL |
| | | | | | LCPFBS_00006 | 200 uL | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL |
| | | | | | LCPFDA_00006 | 200 uL | Perfluorodecanoic acid (PFDA) | 1 ug/mL |
| | | | | | LCPFDoA_00006 | 200 uL | Perfluorododecanoic acid (PFDoA) | 1 ug/mL |
| | | | | | LCPFDS_00005 | 200 uL | Perfluorodecanesulfonic acid (PFDS) | 0.964 ug/mL |
| | | | | | LCPFHpA_00006 | 200 uL | Perfluoroheptanoic acid (PFHpA) | 1 ug/mL |
| | | | | | LCPFHpS_00010 | 200 uL | Perfluoroheptanesulfonic Acid (PFHpS) | 0.952 ug/mL |
| | | | | | LCPFHxA_00005 | 200 uL | Perfluorohexanoic acid (PFHxA) | 1 ug/mL |
| | | | | | LCPFHxS-br_00003 | 200 uL | Perfluorohexanesulfonic acid (PFHxS) | 0.91 ug/mL |
| | | | | | LCPFNA_00007 | 200 uL | Perfluorononanoic acid (PFNA) | 1 ug/mL |
| | | | | | LCPFOA_00007 | 200 uL | Perfluorooctanoic acid (PFOA) | 1 ug/mL |
| | | | | | LCPFOS-br_00003 | 200 uL | Perfluorooctanesulfonic acid (PFOS) | 0.928 ug/mL |
| | | | | | LCPFOSA_00009 | 200 uL | Perfluorooctane Sulfonamide (FOSA) | 1 ug/mL |
| | | | | | LCPFPeA_00006 | 200 uL | Perfluoropentanoic acid (PFPeA) | 1 ug/mL |
| | | | | | LCPFTeDA_00005 | 200 uL | Perfluorotetradecanoic acid (PFTeA) | 1 ug/mL |
| | | | | | LCPFTriDA_00005 | 200 uL | Perfluorotridecanoic Acid (PFTriA) | 1 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------------|----------|-----------|---|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCPFUdA_00006 | 200 uL | Perfluoroundecanoic acid (PFUnA) | 1 ug/mL |
| ...LCPFBA_00006 | 05/27/21 | | Wellington Laboratories, Lot PFBA0516 | | (Purchased Reagent) | | Perfluorobutanoic acid (PFBA) | 50 ug/mL |
| ...LCPFBS_00006 | 03/15/21 | | Wellington Laboratories, Lot LPFBS0316 | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ...LCPFDA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFDA0516 | | (Purchased Reagent) | | Perfluorodecanoic acid (PFDA) | 50 ug/mL |
| ...LCPFDaA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFDoA0516 | | (Purchased Reagent) | | Perfluorododecanoic acid (PFDoA) | 50 ug/mL |
| ...LCPFDS_00005 | 07/02/20 | | Wellington Laboratories, Lot LPFDS0615 | | (Purchased Reagent) | | Perfluorodecanesulfonic acid (PFDS) | 48.2 ug/mL |
| ...LCPFHpA_00006 | 01/22/21 | | Wellington Laboratories, Lot PFHpA0116 | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| ...LCPFHpS_00010 | 11/06/20 | | Wellington Laboratories, Lot LPFHpS1115 | | (Purchased Reagent) | | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ug/mL |
| ...LCPFHxA_00005 | 12/22/20 | | Wellington Laboratories, Lot PFHxA1215 | | (Purchased Reagent) | | Perfluorohexanoic acid (PFHxA) | 50 ug/mL |
| ...LCPFHxS-br_00003 | 07/03/20 | | Wellington Laboratories, Lot brPFHxSK0615 | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ...LCPFNA_00007 | 10/23/20 | | Wellington Laboratories, Lot PFNA1015 | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ...LCPFOA_00007 | 08/02/21 | | Wellington Laboratories, Lot PFOA0716 | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| ...LCPFOS-br_00003 | 10/14/20 | | Wellington Laboratories, Lot brPFOSK1015 | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| ...LCPFOSA_00009 | 09/02/17 | | Wellington Laboratories, Lot FOSA0815I | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| ...LCPFPeA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFPeA0516 | | (Purchased Reagent) | | Perfluoropentanoic acid (PFPeA) | 50 ug/mL |
| ...LCPFTeDA_00005 | 12/09/20 | | Wellington Laboratories, Lot PFTeDA1215 | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| ...LCPFTrDA_00005 | 02/12/21 | | Wellington Laboratories, Lot PFTrDA0216 | | (Purchased Reagent) | | Perfluorotridecanoic Acid (PFTriA) | 50 ug/mL |
| ...LCPFUdA_00006 | 08/19/20 | | Wellington Laboratories, Lot PFUdA0815 | | (Purchased Reagent) | | Perfluoroundecanoic acid (PFUnA) | 50 ug/mL |
| LCPFC_FULL-L2_00006 | 12/27/17 | 07/07/17 | MeOH/H2O, Lot 090285 | 5000 uL | LCMPFC_ALL_SU_00001 | 250 uL | d-N-EtFOSA-M | 50 ng/mL |
| | | | | | | | d-N-MeFOSA-M | 50 ng/mL |
| | | | | | | | d3-NMeFOSAA | 50 ng/mL |
| | | | | | | | d5-NEtFOSAA | 50 ng/mL |
| | | | | | | | M2-6:2FTS | 47.5 ng/mL |
| | | | | | | | M2-8:2FTS | 47.9 ng/mL |
| | | | | | | | 13C2-PFHxDA | 50 ng/mL |
| | | | | | | | 13C2-PFTeDA | 50 ng/mL |
| | | | | | | | 13C4-PFHpA | 50 ng/mL |
| | | | | | | | 13C5 PFPeA | 50 ng/mL |
| | | | | | | | 13C8 FOSA | 50 ng/mL |
| | | | | | | | 13C4 PFBA | 50 ng/mL |
| | | | | | | | 13C2 PFDA | 50 ng/mL |
| | | | | | | | 13C2 PFDoA | 50 ng/mL |
| | | | | | | | 13C2 PFHxA | 50 ng/mL |
| | | | | | | | 1802 PFHxS | 47.3 ng/mL |
| | | | | | | | 13C5 PFNA | 50 ng/mL |
| | | | | | | | 13C4 PFOA | 50 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|------------|----------|-----------|---------------|----------------------|--------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | 13C4 PFOS | 47.8 ng/mL |
| | | | | | | | 13C2 PFUnA | 50 ng/mL |
| | | | | | LCPFC_ALL_SP_00001 | 50 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.934 ng/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ng/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.958 ng/mL |
| | | | | | | | N-ethylperfluoro-1-octanesulfonamide | 1 ng/mL |
| | | | | | | | N-ethyl perfluorooctane sulfonamidoacetic acid | 1 ng/mL |
| | | | | | | | MeFOSA | 1 ng/mL |
| | | | | | | | N-methyl perfluorooctane sulfonamidoacetic acid | 1 ng/mL |
| | | | | | | | Perfluorobutanoic acid (PFBA) | 1 ng/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 0.884 ng/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 1 ng/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 1 ng/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 0.964 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 1 ng/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 0.952 ng/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 1 ng/mL |
| | | | | | | | Perfluorohexadecanoic acid | 1 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 0.91 ng/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 1 ng/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 1 ng/mL |
| | | | | | | | Perfluorooctadecanoic acid | 1 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 0.928 ng/mL |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 1 ng/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 1 ng/mL |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 1 ng/mL |
| | | | | | | | Perfluorotridecanoic Acid (PFTriA) | 1 ng/mL |
| | | | | | | | Perfluoroundecanoic acid (PFUnA) | 1 ng/mL |
| | | | | | LCPFCIS_00003 | 50 uL | 13C2-PFOA | 50 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|---|----------------------------|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| .LCMPFC_ALL_SU_00001 | 12/29/17 | 06/29/17 | Methanol, Lot Baker 141039 | 10000 uL | LCd-NEtFOSA-M_00005 | 200 uL | d-N-EtFOSA-M | 1 ug/mL |
| | | | | | LCd-NMeFOSA-M_00004 | 200 uL | d-N-MeFOSA-M | 1 ug/mL |
| | | | | | LCd3-NMeFOSAA_00004 | 200 uL | d3-NMeFOSAA | 1 ug/mL |
| | | | | | LCd5-NEtFOSAA_00004 | 200 uL | d5-NEtFOSAA | 1 ug/mL |
| | | | | | LCM2-6:FTS_00004 | 200 uL | M2-6:2FTS | 0.95 ug/mL |
| | | | | | LCM2-8:2FTS_00004 | 200 uL | M2-8:2FTS | 0.958 ug/mL |
| | | | | | LCM2PFHxDA_00010 | 200 uL | 13C2-PFHxDA | 1 ug/mL |
| | | | | | LCM2PFTeDA_00009 | 200 uL | 13C2-PFTeDA | 1 ug/mL |
| | | | | | LCM4PFHPA_00009 | 200 uL | 13C4-PFHpa | 1 ug/mL |
| | | | | | LCM5PFPEA_00010 | 200 uL | 13C5 PFPeA | 1 ug/mL |
| | | | | | LCM8FOSA_00013 | 200 uL | 13C8 FOSA | 1 ug/mL |
| | | | | | LCMPFBA_00010 | 200 uL | 13C4 PFBA | 1 ug/mL |
| | | | | | LCMPFDA_00015 | 200 uL | 13C2 PFDA | 1 ug/mL |
| | | | | | LCMPFDoA_00010 | 200 uL | 13C2 PFDoA | 1 ug/mL |
| | | | | | LCMPFHxA_00016 | 200 uL | 13C2 PFHxA | 1 ug/mL |
| | | | | | LCMPFHxS_00010 | 200 uL | 18O2 PFHxS | 0.946 ug/mL |
| | | | | | LCMPFNA_00010 | 200 uL | 13C5 PFNA | 1 ug/mL |
| | | | | | LCMPFOA_00014 | 200 uL | 13C4 PFOA | 1 ug/mL |
| LCMPFOS_00022 | 200 uL | 13C4 PFOS | 0.956 ug/mL | | | | | |
| LCMPFUdA_00011 | 200 uL | 13C2 PFUnA | 1 ug/mL | | | | | |
| ..LCd-NEtFOSA-M_00005 | 06/10/21 | WELLINGTON, Lot dNetFOSA0616M | | | (Purchased Reagent) | d-N-EtFOSA-M | 50 ug/mL | |
| ..LCd-NMeFOSA-M_00004 | 06/10/21 | WELLINGTON, Lot dNMeFOSA0616M | | | (Purchased Reagent) | d-N-MeFOSA-M | 50 ug/mL | |
| ..LCd3-NMeFOSAA_00004 | 11/22/21 | WELLINGTON, Lot d3NMeFOSAA1116 | | | (Purchased Reagent) | d3-NMeFOSAA | 50 ug/mL | |
| ..LCd5-NEtFOSAA_00004 | 11/22/21 | WELLINGTON, Lot d5NEtFOSAA1116 | | | (Purchased Reagent) | d5-NEtFOSAA | 50 ug/mL | |
| ..LCM2-6:FTS_00004 | 02/17/22 | WELLINGTON, Lot M262FTS0217 | | | (Purchased Reagent) | M2-6:2FTS | 47.5 ug/mL | |
| ..LCM2-8:2FTS_00004 | 08/22/21 | WELLINGTON, Lot M282FTS0816 | | | (Purchased Reagent) | M2-8:2FTS | 47.9 ug/mL | |
| ..LCM2PFHxDA_00010 | 01/07/21 | Wellington Laboratories, Lot M2PFHxDA1112 | | | (Purchased Reagent) | 13C2-PFHxDA | 50 ug/mL | |
| ..LCM2PFTeDA_00009 | 12/07/20 | Wellington Laboratories, Lot M2PFTeDA0217 | | | (Purchased Reagent) | 13C2-PFTeDA | 50 ug/mL | |
| ..LCM4PFHPA_00009 | 05/27/21 | Wellington Laboratories, Lot M4PFHpa0516 | | | (Purchased Reagent) | 13C4-PFHpa | 50 ug/mL | |
| ..LCM5PFPEA_00010 | 11/22/21 | Wellington Laboratories, Lot M5PFPeA1116 | | | (Purchased Reagent) | 13C5 PFPeA | 50 ug/mL | |
| ..LCM8FOSA_00013 | 12/22/20 | Wellington Laboratories, Lot M8FOSA1215I | | | (Purchased Reagent) | 13C8 FOSA | 50 ug/mL | |
| ..LCMPFBA_00010 | 05/24/21 | Wellington Laboratories, Lot MPFBA0516 | | | (Purchased Reagent) | 13C4 PFBA | 50 ug/mL | |
| ..LCMPFDA_00015 | 09/30/21 | Wellington Laboratories, Lot MPFDA0916 | | | (Purchased Reagent) | 13C2 PFDA | 50 ug/mL | |
| ..LCMPFDoA_00010 | 04/08/21 | Wellington Laboratories, Lot MPFDoA0416 | | | (Purchased Reagent) | 13C2 PFDoA | 50 ug/mL | |
| ..LCMPFHxA_00016 | 11/22/21 | Wellington Laboratories, Lot MPFHxA1116 | | | (Purchased Reagent) | 13C2 PFHxA | 50 ug/mL | |
| ..LCMPFHxS_00010 | 02/17/22 | Wellington Laboratories, Lot MPFHxS0217 | | | (Purchased Reagent) | 18O2 PFHxS | 47.3 ug/mL | |
| ..LCMPFNA_00010 | 09/30/21 | Wellington Laboratories, Lot MPFNA0916 | | | (Purchased Reagent) | 13C5 PFNA | 50 ug/mL | |
| ..LCMPFOA_00014 | 04/12/22 | Wellington Laboratories, Lot MPFOA0417 | | | (Purchased Reagent) | 13C4 PFOA | 50 ug/mL | |
| ..LCMPFOS_00022 | 12/12/21 | Wellington Laboratories, Lot MPFOS1216 | | | (Purchased Reagent) | 13C4 PFOS | 47.8 ug/mL | |
| ..LCMPFUdA_00011 | 11/22/21 | Wellington Laboratories, Lot MPFUdA1116 | | | (Purchased Reagent) | 13C2 PFUnA | 50 ug/mL | |
| .LCPFC_ALL_SP_00001 | 12/27/17 | 07/07/17 | Methanol, Lot 157237 | 10000 uL | LCPFC2SP_00037 | 1000 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.0934 ug/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.0948 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-------------------------------------|-----------|-----------|----------------------|----------------------|----------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.0958 ug/mL |
| | | | | | | | N-ethylperfluoro-1-octanesulfonamide | 0.1 ug/mL |
| | | | | | | | N-ethyl perfluorooctane sulfonamidoacetic acid | 0.1 ug/mL |
| | | | | | | | MeFOSA | 0.1 ug/mL |
| | | | | | LCPFCSP_00103 | 1000 uL | N-methyl perfluorooctane sulfonamidoacetic acid | 0.1 ug/mL |
| | | | | | | | Perfluorobutanoic acid (PFBA) | 0.1 ug/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 0.0884 ug/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 0.1 ug/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 0.1 ug/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 0.0964 ug/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 0.1 ug/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHps) | 0.0952 ug/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 0.1 ug/mL |
| | | | | | | | Perfluorohexadecanoic acid | 0.1 ug/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 0.091 ug/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 0.1 ug/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 0.1 ug/mL |
| | | | | | | | Perfluorooctadecanoic acid | 0.1 ug/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 0.0928 ug/mL |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 0.1 ug/mL |
| Perfluoropentanoic acid (PFPeA) | 0.1 ug/mL | | | | | | | |
| Perfluorotetradecanoic acid (PFTeA) | 0.1 ug/mL | | | | | | | |
| Perfluorotridecanoic Acid (PFTriA) | 0.1 ug/mL | | | | | | | |
| Perfluoroundecanoic acid (PFUnA) | 0.1 ug/mL | | | | | | | |
| ..LCPFC2SP_00037 | 01/07/18 | 07/07/17 | Methanol, Lot 104453 | 10 mL | LC4:2FTS_00002 | 200 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.934 ug/mL |
| | | | | | LC6:2FTS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL |
| | | | | | LC8:2FTS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.958 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|------------------------------|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCN-EtFOSA-M_00004 | 200 uL | N-ethylperfluoro-1-octanesulfo namide | 1 ug/mL |
| | | | | | LCN-EtFOSAA_00002 | 200 uL | N-ethyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| | | | | | LCN-MeFOSA-M_00003 | 200 uL | MeFOSA | 1 ug/mL |
| | | | | | LCN-MeFOSAA_00003 | 200 uL | N-methyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| ...LC4:2FTS_00002 | 12/12/21 | | WELLINGTON, Lot 42FTS1216 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 46.7 ug/mL |
| ...LC6:2FTS_00003 | 06/25/21 | | WELLINGTON, Lot 62FTS0616 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL |
| ...LC8:2FTS_00003 | 08/22/21 | | WELLINGTON, Lot 82FTS0816 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 47.9 ug/mL |
| ...LCN-EtFOSA-M_00004 | 05/24/21 | | WELLINGTON, Lot NETFOSA0516M | | (Purchased Reagent) | | N-ethylperfluoro-1-octanesulfo namide | 50 ug/mL |
| ...LCN-EtFOSAA_00002 | 01/20/21 | | WELLINGTON, Lot NETFOSAA0116 | | (Purchased Reagent) | | N-ethyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ...LCN-MeFOSA-M_00003 | 05/24/21 | | WELLINGTON, Lot NMeFOSA0516M | | (Purchased Reagent) | | MeFOSA | 50 ug/mL |
| ...LCN-MeFOSAA_00003 | 01/20/21 | | WELLINGTON, Lot NMeFOSAA0116 | | (Purchased Reagent) | | N-methyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ..LCPFCSP_00103 | 12/27/17 | 06/27/17 | Methanol, Lot 090285 | 10000 uL | LCPFBA_00006 | 200 uL | Perfluorobutanoic acid (PFBA) | 1 ug/mL |
| | | | | | LCPFBS_00006 | 200 uL | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL |
| | | | | | LCPFDA_00006 | 200 uL | Perfluorodecanoic acid (PFDA) | 1 ug/mL |
| | | | | | LCPFDoA_00006 | 200 uL | Perfluorododecanoic acid (PFDoA) | 1 ug/mL |
| | | | | | LCPFDS_00005 | 200 uL | Perfluorodecanesulfonic acid (PFDS) | 0.964 ug/mL |
| | | | | | LCPFHpA_00006 | 200 uL | Perfluoroheptanoic acid (PFHpA) | 1 ug/mL |
| | | | | | LCPFHpS_00010 | 200 uL | Perfluoroheptanesulfonic Acid (PFHpS) | 0.952 ug/mL |
| | | | | | LCPFHxA_00005 | 200 uL | Perfluorohexanoic acid (PFHxA) | 1 ug/mL |
| | | | | | LCPFHxDA_00007 | 200 uL | Perfluorohexadecanoic acid | 1 ug/mL |
| | | | | | LCPFHxS-br_00003 | 200 uL | Perfluorohexanesulfonic acid (PFHxS) | 0.91 ug/mL |
| | | | | | LCPFNA_00007 | 200 uL | Perfluorononanoic acid (PFNA) | 1 ug/mL |
| | | | | | LCPFOA_00007 | 200 uL | Perfluorooctanoic acid (PFOA) | 1 ug/mL |
| | | | | | LCPFOA_00007 | 200 uL | Perfluorooctadecanoic acid | 1 ug/mL |
| | | | | | LCPFOS-br_00003 | 200 uL | Perfluorooctanesulfonic acid (PFOS) | 0.928 ug/mL |
| | | | | | LCPFOSA_00010 | 200 uL | Perfluorooctane Sulfonamide (FOSA) | 1 ug/mL |
| | | | | | LCPFPeA_00006 | 200 uL | Perfluoropentanoic acid (PFPeA) | 1 ug/mL |
| | | | | | LCPFTeDA_00005 | 200 uL | Perfluorotetradecanoic acid (PFTeA) | 1 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------------|----------|---|----------------------|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCPFTrDA_00005 | 200 uL | Perfluorotridecanoic Acid (PFTriA) | 1 ug/mL |
| | | | | | LCPFUdA_00006 | 200 uL | Perfluoroundecanoic acid (PFUnA) | 1 ug/mL |
| ...LCPFBFA_00006 | 05/27/21 | Wellington Laboratories, Lot PFBA0516 | | | (Purchased Reagent) | | Perfluorobutanoic acid (PFBA) | 50 ug/mL |
| ...LCPFBFS_00006 | 03/15/21 | Wellington Laboratories, Lot LPFBS0316 | | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ...LCPFDDA_00006 | 05/31/21 | Wellington Laboratories, Lot PFDA0516 | | | (Purchased Reagent) | | Perfluorodecanoic acid (PFDA) | 50 ug/mL |
| ...LCPFDdA_00006 | 05/31/21 | Wellington Laboratories, Lot PFDoA0516 | | | (Purchased Reagent) | | Perfluorododecanoic acid (PFDoA) | 50 ug/mL |
| ...LCPFDS_00005 | 07/02/20 | Wellington Laboratories, Lot LPFDS0615 | | | (Purchased Reagent) | | Perfluorodecanesulfonic acid (PFDS) | 48.2 ug/mL |
| ...LCPFHpA_00006 | 01/22/21 | Wellington Laboratories, Lot PFHpA0116 | | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| ...LCPFHpS_00010 | 11/06/20 | Wellington Laboratories, Lot LPFHpS1115 | | | (Purchased Reagent) | | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ug/mL |
| ...LCPFHxA_00005 | 12/22/20 | Wellington Laboratories, Lot PFHxA1215 | | | (Purchased Reagent) | | Perfluorohexanoic acid (PFHxA) | 50 ug/mL |
| ...LCPFHxDA_00007 | 05/25/21 | Wellington Laboratories, Lot PFHxDA0516 | | | (Purchased Reagent) | | Perfluorohexadecanoic acid | 50 ug/mL |
| ...LCPFHxS-br_00003 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 | | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ...LCPFNDA_00007 | 10/23/20 | Wellington Laboratories, Lot PFNA1015 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ...LCPFOA_00007 | 08/02/21 | Wellington Laboratories, Lot PFOA0716 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| ...LCPFODA_00007 | 04/29/21 | Wellington Laboratories, Lot PFODA0416 | | | (Purchased Reagent) | | Perfluorooctadecanoic acid | 50 ug/mL |
| ...LCPFOS-br_00003 | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015 | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| ...LCPFOSA_00010 | 09/30/21 | Wellington Laboratories, Lot FOSA0916I | | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| ...LCPFPeA_00006 | 05/31/21 | Wellington Laboratories, Lot PFPeA0516 | | | (Purchased Reagent) | | Perfluoropentanoic acid (PFPeA) | 50 ug/mL |
| ...LCPFTeDA_00005 | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215 | | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| ...LCPFTTrDA_00005 | 02/12/21 | Wellington Laboratories, Lot PFTrDA0216 | | | (Purchased Reagent) | | Perfluorotridecanoic Acid (PFTriA) | 50 ug/mL |
| ...LCPFUdA_00006 | 08/19/20 | Wellington Laboratories, Lot PFUdA0815 | | | (Purchased Reagent) | | Perfluoroundecanoic acid (PFUnA) | 50 ug/mL |
| .LCPFCIS_00003 | 12/30/17 | 06/30/17 | Methanol, Lot 14139 | 5000 uL | LCM2PFOA_00005 | 500 uL | 13C2-PFOA | 5 ug/mL |
| ..LCM2PFOA_00005 | 06/19/18 | Wellington Laboratories, Lot M2PFOA0613 | | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL |
| LCPFC_FULL-L3_00005 | 12/27/17 | 07/07/17 | MeOH/H2O, Lot 090285 | 5000 uL | LCMPFC_ALL_SU_00001 | 250 uL | d-N-EtFOSA-M | 50 ng/mL |
| | | | | | | | d-N-MeFOSA-M | 50 ng/mL |
| | | | | | | | d3-NMeFOSAA | 50 ng/mL |
| | | | | | | | d5-NMeFOSAA | 50 ng/mL |
| | | | | | | | M2-6:2FTS | 47.5 ng/mL |
| | | | | | | | M2-8:2FTS | 47.9 ng/mL |
| | | | | | | | 13C2-PFHxDA | 50 ng/mL |
| | | | | | | | 13C2-PFTeDA | 50 ng/mL |
| | | | | | | | 13C4-PFHpA | 50 ng/mL |
| | | | | | | | 13C5 PFPeA | 50 ng/mL |
| | | | | | | | 13C8 FOSA | 50 ng/mL |
| | | | | | | | 13C4 PFBA | 50 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|------------|----------|-----------|---------------|----------------------|--------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | 13C2 PFDA | 50 ng/mL |
| | | | | | | | 13C2 PFDoA | 50 ng/mL |
| | | | | | | | 13C2 PFHxA | 50 ng/mL |
| | | | | | | | 18O2 PFHxS | 47.3 ng/mL |
| | | | | | | | 13C5 PFNA | 50 ng/mL |
| | | | | | | | 13C4 PFOA | 50 ng/mL |
| | | | | | | | 13C4 PFOS | 47.8 ng/mL |
| | | | | | | | 13C2 PFUnA | 50 ng/mL |
| | | | | | LCPFC_ALL_SP_00001 | 250 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 4.67 ng/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 4.74 ng/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 4.79 ng/mL |
| | | | | | | | N-ethylperfluoro-1-octanesulfoamide | 5 ng/mL |
| | | | | | | | N-ethyl perfluorooctane sulfonamidoacetic acid | 5 ng/mL |
| | | | | | | | MeFOSA | 5 ng/mL |
| | | | | | | | N-methyl perfluorooctane sulfonamidoacetic acid | 5 ng/mL |
| | | | | | | | Perfluorobutanoic acid (PFBA) | 5 ng/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 4.42 ng/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 5 ng/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 5 ng/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 4.82 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 5 ng/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 4.76 ng/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 5 ng/mL |
| | | | | | | | Perfluorohexadecanoic acid | 5 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 4.55 ng/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 5 ng/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 5 ng/mL |
| | | | | | | | Perfluorooctadecanoic acid | 5 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 4.64 ng/mL |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 5 ng/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 5 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|---|----------------------|---------------------|--------------|-------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 5 ng/mL |
| | | | | | | | Perfluorotridecanoic Acid (PFTriA) | 5 ng/mL |
| | | | | | | | Perfluoroundecanoic acid (PFUnA) | 5 ng/mL |
| | | | | | LCPFCIS 00003 | 50 uL | 13C2-PFOA | 50 ng/mL |
| ..LCMPFC_ALL_SU_00001 | 12/29/17 | 06/29/17 | Methanol, Lot Baker 141039 | 10000 uL | Lcd-NEtFOSA-M_00005 | 200 uL | d-N-EtFOSA-M | 1 ug/mL |
| | | | | | LCd-NMeFOSA-M 00004 | 200 uL | d-N-MeFOSA-M | 1 ug/mL |
| | | | | | LCd3-NMeFOSAA 00004 | 200 uL | d3-NMeFOSAA | 1 ug/mL |
| | | | | | LCd5-NEtFOSAA 00004 | 200 uL | d5-NEtFOSAA | 1 ug/mL |
| | | | | | LCM2-6:FtS 00004 | 200 uL | M2-6:2FtS | 0.95 ug/mL |
| | | | | | LCM2-8:2FtS 00004 | 200 uL | M2-8:2FtS | 0.958 ug/mL |
| | | | | | LCM2PFHxDA 00010 | 200 uL | 13C2-PFHxDA | 1 ug/mL |
| | | | | | LCM2PFtEDA 00009 | 200 uL | 13C2-PFtEDA | 1 ug/mL |
| | | | | | LCM4PFHPA 00009 | 200 uL | 13C4-PFHpa | 1 ug/mL |
| | | | | | LCM5PFPEA 00010 | 200 uL | 13C5 PFPeA | 1 ug/mL |
| | | | | | LCM8FOSA 00013 | 200 uL | 13C8 FOSA | 1 ug/mL |
| | | | | | LCMPFBA 00010 | 200 uL | 13C4 PFBA | 1 ug/mL |
| | | | | | LCMPFDA 00015 | 200 uL | 13C2 PFDA | 1 ug/mL |
| | | | | | LCMPFDoA 00010 | 200 uL | 13C2 PFDoA | 1 ug/mL |
| | | | | | LCMPFHxA 00016 | 200 uL | 13C2 PFHxA | 1 ug/mL |
| | | | | | LCMPFHxS 00010 | 200 uL | 18O2 PFHxS | 0.946 ug/mL |
| | | | | | LCMPFNA 00010 | 200 uL | 13C5 PFNA | 1 ug/mL |
| | | | | | LCMPFOA 00014 | 200 uL | 13C4 PFOA | 1 ug/mL |
| | | | | | LCMPFOS 00022 | 200 uL | 13C4 PFOS | 0.956 ug/mL |
| | | | | | LCMPFUdA 00011 | 200 uL | 13C2 PFUnA | 1 ug/mL |
| ..LCd-NEtFOSA-M 00005 | 06/10/21 | | WELLINGTON, Lot dNEtFOSA0616M | | (Purchased Reagent) | | d-N-EtFOSA-M | 50 ug/mL |
| ..LCd-NMeFOSA-M 00004 | 06/10/21 | | WELLINGTON, Lot dNMeFOSA0616M | | (Purchased Reagent) | | d-N-MeFOSA-M | 50 ug/mL |
| ..LCd3-NMeFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d3NMeFOSAA1116 | | (Purchased Reagent) | | d3-NMeFOSAA | 50 ug/mL |
| ..LCd5-NEtFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d5NEtFOSAA1116 | | (Purchased Reagent) | | d5-NEtFOSAA | 50 ug/mL |
| ..LCM2-6:FtS 00004 | 02/17/22 | | WELLINGTON, Lot M262FtS0217 | | (Purchased Reagent) | | M2-6:2FtS | 47.5 ug/mL |
| ..LCM2-8:2FtS 00004 | 08/22/21 | | WELLINGTON, Lot M282FtS0816 | | (Purchased Reagent) | | M2-8:2FtS | 47.9 ug/mL |
| ..LCM2PFHxDA 00010 | 01/07/21 | | Wellington Laboratories, Lot M2PFHxDA1112 | | (Purchased Reagent) | | 13C2-PFHxDA | 50 ug/mL |
| ..LCM2PFtEDA 00009 | 12/07/20 | | Wellington Laboratories, Lot M2PFtEDA0217 | | (Purchased Reagent) | | 13C2-PFtEDA | 50 ug/mL |
| ..LCM4PFHPA 00009 | 05/27/21 | | Wellington Laboratories, Lot M4PFHPA0516 | | (Purchased Reagent) | | 13C4-PFHpa | 50 ug/mL |
| ..LCM5PFPEA 00010 | 11/22/21 | | Wellington Laboratories, Lot M5PFPeA1116 | | (Purchased Reagent) | | 13C5 PFPeA | 50 ug/mL |
| ..LCM8FOSA 00013 | 12/22/20 | | Wellington Laboratories, Lot M8FOSA1215I | | (Purchased Reagent) | | 13C8 FOSA | 50 ug/mL |
| ..LCMPFBA 00010 | 05/24/21 | | Wellington Laboratories, Lot MPFBA0516 | | (Purchased Reagent) | | 13C4 PFBA | 50 ug/mL |
| ..LCMPFDA 00015 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| ..LCMPFDoA 00010 | 04/08/21 | | Wellington Laboratories, Lot MPFDoA0416 | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL |
| ..LCMPFHxA 00016 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| ..LCMPFHxS 00010 | 02/17/22 | | Wellington Laboratories, Lot MPFHxS0217 | | (Purchased Reagent) | | 18O2 PFHxS | 47.3 ug/mL |
| ..LCMPFNA 00010 | 09/30/21 | | Wellington Laboratories, Lot MPFNA0916 | | (Purchased Reagent) | | 13C5 PFNA | 50 ug/mL |
| ..LCMPFOA 00014 | 04/12/22 | | Wellington Laboratories, Lot MPFOA0417 | | (Purchased Reagent) | | 13C4 PFOA | 50 ug/mL |
| ..LCMPFOS 00022 | 12/12/21 | | Wellington Laboratories, Lot MPFOS1216 | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| ..LCMPFUdA 00011 | 11/22/21 | | Wellington Laboratories, Lot MPFUdA1116 | | (Purchased Reagent) | | 13C2 PFUnA | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-------------------------------------|-----------|-----------|----------------------|----------------------|----------------|--------------|---|---------------|
| | | | | | Reagent ID | Volume Added | | |
| .LCPFC_ALL_SP_00001 | 12/27/17 | 07/07/17 | Methanol, Lot 157237 | 10000 uL | LCPFC2SP_00037 | 1000 uL | Sodium 1H, 1H, 2H, 2H-perfluorohexane sulfonate (4:2) | 0.0934 ug/mL |
| | | | | | | | Sodium 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2) | 0.0948 ug/mL |
| | | | | | | | Sodium 1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2) | 0.0958 ug/mL |
| | | | | | | | N-ethylperfluoro-1-octanesulfo namide | 0.1 ug/mL |
| | | | | | | | N-ethyl perfluorooctane sulfonamidoacetic acid | 0.1 ug/mL |
| | | | | | | | MeFOSA | 0.1 ug/mL |
| | | | | | | | N-methyl perfluorooctane sulfonamidoacetic acid | 0.1 ug/mL |
| | | | | | LCPFCSP_00103 | 1000 uL | Perfluorobutanoic acid (PFBA) | 0.1 ug/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 0.0884 ug/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 0.1 ug/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 0.1 ug/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 0.0964 ug/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 0.1 ug/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 0.0952 ug/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 0.1 ug/mL |
| | | | | | | | Perfluorohexadecanoic acid | 0.1 ug/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 0.091 ug/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 0.1 ug/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 0.1 ug/mL |
| | | | | | | | Perfluorooctadecanoic acid | 0.1 ug/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 0.0928 ug/mL |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 0.1 ug/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 0.1 ug/mL |
| Perfluorotetradecanoic acid (PFTeA) | 0.1 ug/mL | | | | | | | |
| Perfluorotridecanoic Acid (PFTriA) | 0.1 ug/mL | | | | | | | |
| Perfluoroundecanoic acid (PFUnA) | 0.1 ug/mL | | | | | | | |
| ..LCPFC2SP_00037 | 01/07/18 | 07/07/17 | Methanol, Lot 104453 | 10 mL | LC4:2FTS_00002 | 200 uL | Sodium 1H, 1H, 2H, 2H-perfluorohexane sulfonate (4:2) | 0.934 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|------------------------------|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LC6:2FTS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL |
| | | | | | LC8:2FTS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.958 ug/mL |
| | | | | | LCN-EtFOSA-M_00004 | 200 uL | N-ethylperfluoro-1-octanesulfo namide | 1 ug/mL |
| | | | | | LCN-EtFOSAA_00002 | 200 uL | N-ethyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| | | | | | LCN-MeFOSA-M_00003 | 200 uL | MeFOSA | 1 ug/mL |
| | | | | | LCN-MeFOSAA_00003 | 200 uL | N-methyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| ...LC4:2FTS_00002 | 12/12/21 | | WELLINGTON, Lot 42FTS1216 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 46.7 ug/mL |
| ...LC6:2FTS_00003 | 06/25/21 | | WELLINGTON, Lot 62FTS0616 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL |
| ...LC8:2FTS_00003 | 08/22/21 | | WELLINGTON, Lot 82FTS0816 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 47.9 ug/mL |
| ...LCN-EtFOSA-M_00004 | 05/24/21 | | WELLINGTON, Lot NetFOSA0516M | | (Purchased Reagent) | | N-ethylperfluoro-1-octanesulfo namide | 50 ug/mL |
| ...LCN-EtFOSAA_00002 | 01/20/21 | | WELLINGTON, Lot NetFOSAA0116 | | (Purchased Reagent) | | N-ethyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ...LCN-MeFOSA-M_00003 | 05/24/21 | | WELLINGTON, Lot NMeFOSA0516M | | (Purchased Reagent) | | MeFOSA | 50 ug/mL |
| ...LCN-MeFOSAA_00003 | 01/20/21 | | WELLINGTON, Lot NMeFOSAA0116 | | (Purchased Reagent) | | N-methyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ..LCPFCSP_00103 | 12/27/17 | 06/27/17 | Methanol, Lot 090285 | 10000 uL | LCPFBA_00006 | 200 uL | Perfluorobutanoic acid (PFBA) | 1 ug/mL |
| | | | | | LCPFBS_00006 | 200 uL | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL |
| | | | | | LCPFDA_00006 | 200 uL | Perfluorodecanoic acid (PFDA) | 1 ug/mL |
| | | | | | LCPFDoA_00006 | 200 uL | Perfluorododecanoic acid (PFDoA) | 1 ug/mL |
| | | | | | LCPFDS_00005 | 200 uL | Perfluorodecanesulfonic acid (PFDS) | 0.964 ug/mL |
| | | | | | LCPFHpA_00006 | 200 uL | Perfluoroheptanoic acid (PFHpA) | 1 ug/mL |
| | | | | | LCPFHpS_00010 | 200 uL | Perfluoroheptanesulfonic Acid (PFHpS) | 0.952 ug/mL |
| | | | | | LCPFHxA_00005 | 200 uL | Perfluorohexanoic acid (PFHxA) | 1 ug/mL |
| | | | | | LCPFHxDA_00007 | 200 uL | Perfluorohexadecanoic acid | 1 ug/mL |
| | | | | | LCPFHxS-br_00003 | 200 uL | Perfluorohexanesulfonic acid (PFHxS) | 0.91 ug/mL |
| | | | | | LCPFNA_00007 | 200 uL | Perfluorononanoic acid (PFNA) | 1 ug/mL |
| | | | | | LCPFOA_00007 | 200 uL | Perfluorooctanoic acid (PFOA) | 1 ug/mL |
| | | | | | LCPFODA_00007 | 200 uL | Perfluorooctadecanoic acid | 1 ug/mL |
| | | | | | LCPFOS-br_00003 | 200 uL | Perfluorooctanesulfonic acid (PFOS) | 0.928 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------------|----------|---|----------------------|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCPFOSA_00010 | 200 uL | Perfluorooctane Sulfonamide (FOSA) | 1 ug/mL |
| | | | | | LCPFPeA_00006 | 200 uL | Perfluoropentanoic acid (PFPeA) | 1 ug/mL |
| | | | | | LCPFTeDA_00005 | 200 uL | Perfluorotetradecanoic acid (PFTeA) | 1 ug/mL |
| | | | | | LCPFTrDA_00005 | 200 uL | Perfluorotridecanoic Acid (PFTriA) | 1 ug/mL |
| | | | | | LCPFUdA_00006 | 200 uL | Perfluoroundecanoic acid (PFUnA) | 1 ug/mL |
| ...LCPFBA_00006 | 05/27/21 | Wellington Laboratories, Lot PFBA0516 | | | (Purchased Reagent) | | Perfluorobutanoic acid (PFBA) | 50 ug/mL |
| ...LCPFBS_00006 | 03/15/21 | Wellington Laboratories, Lot LPFBS0316 | | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ...LCPFDA_00006 | 05/31/21 | Wellington Laboratories, Lot PFDA0516 | | | (Purchased Reagent) | | Perfluorodecanoic acid (PFDA) | 50 ug/mL |
| ...LCPFDoA_00006 | 05/31/21 | Wellington Laboratories, Lot PFDoA0516 | | | (Purchased Reagent) | | Perfluorododecanoic acid (PFDoA) | 50 ug/mL |
| ...LCPFDS_00005 | 07/02/20 | Wellington Laboratories, Lot LPFDS0615 | | | (Purchased Reagent) | | Perfluorodecanesulfonic acid (PFDS) | 48.2 ug/mL |
| ...LCPFHpA_00006 | 01/22/21 | Wellington Laboratories, Lot PFHpA0116 | | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| ...LCPFHpS_00010 | 11/06/20 | Wellington Laboratories, Lot LPFHpS1115 | | | (Purchased Reagent) | | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ug/mL |
| ...LCPFHxA_00005 | 12/22/20 | Wellington Laboratories, Lot PFHxA1215 | | | (Purchased Reagent) | | Perfluorohexanoic acid (PFHxA) | 50 ug/mL |
| ...LCPFHxDA_00007 | 05/25/21 | Wellington Laboratories, Lot PFHxDA0516 | | | (Purchased Reagent) | | Perfluorohexadecanoic acid | 50 ug/mL |
| ...LCPFHxS-br_00003 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 | | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ...LCPFNA_00007 | 10/23/20 | Wellington Laboratories, Lot PFNA1015 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ...LCPFOA_00007 | 08/02/21 | Wellington Laboratories, Lot PFOA0716 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| ...LCPFODA_00007 | 04/29/21 | Wellington Laboratories, Lot PFODA0416 | | | (Purchased Reagent) | | Perfluorooctadecanoic acid | 50 ug/mL |
| ...LCPFOS-br_00003 | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015 | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| ...LCPFOSA_00010 | 09/30/21 | Wellington Laboratories, Lot FOSA0916I | | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| ...LCPFPeA_00006 | 05/31/21 | Wellington Laboratories, Lot PFPeA0516 | | | (Purchased Reagent) | | Perfluoropentanoic acid (PFPeA) | 50 ug/mL |
| ...LCPFTeDA_00005 | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215 | | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| ...LCPFTrDA_00005 | 02/12/21 | Wellington Laboratories, Lot PFTTrDA0216 | | | (Purchased Reagent) | | Perfluorotridecanoic Acid (PFTriA) | 50 ug/mL |
| ...LCPFUdA_00006 | 08/19/20 | Wellington Laboratories, Lot PFUdA0815 | | | (Purchased Reagent) | | Perfluoroundecanoic acid (PFUnA) | 50 ug/mL |
| .LCPFCIS_00003 | 12/30/17 | 06/30/17 | Methanol, Lot 14139 | 5000 uL | LCM2PFOA_00005 | 500 uL | 13C2-PFOA | 5 ug/mL |
| ..LCM2PFOA_00005 | 06/19/18 | Wellington Laboratories, Lot M2PFOA0613 | | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL |
| LCPFC_FULL-L4_00005 | 09/02/17 | 05/30/17 | MeOH/H2O, Lot 090285 | 5000 uL | LCMPFCSU_00069 | 250 uL | 13C8 FOSA | 50 ng/mL |
| | | | | | | | 13C2 PFDoA | 50 ng/mL |
| | | | | | LCPFCSP_00096 | 100 uL | Perfluorooctane Sulfonamide (FOSA) | 20 ng/mL |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 20 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | | | | | |
|-----------------------------|----------|--|----------------------------|----------------------|---------------------|--------------|---|---------------|--|----------------|--------|--|-------------|
| | | | | | Reagent ID | Volume Added | | | | | | | |
| .LCMPFCSU_00069 | 11/24/17 | 05/24/17 | Methanol, Lot Baker 141039 | 10000 uL | LCM8FOSA_00012 | 200 uL | 13C8 FOSA | 1 ug/mL | | | | | |
| | | | | | LCMPFDoA_00009 | 200 uL | 13C2 PFDoA | 1 ug/mL | | | | | |
| ..LCM8FOSA_00012 | 12/22/20 | Wellington Laboratories, Lot M8FOSA1215I | | | (Purchased Reagent) | | 13C8 FOSA | 50 ug/mL | | | | | |
| ..LCMPFDoA_00009 | 04/08/21 | Wellington Laboratories, Lot MPFDoA0416 | | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL | | | | | |
| .LCPFCSP_00096 | 09/02/17 | 05/24/17 | Methanol, Lot 090285 | 10000 uL | LCPFOSA_00009 | 200 uL | Perfluorooctane Sulfonamide (FOSA) | 1 ug/mL | | | | | |
| | | | | | LCPFTeDA_00005 | 200 uL | Perfluorotetradecanoic acid (PFTeA) | 1 ug/mL | | | | | |
| ..LCPFOSA_00009 | 09/02/17 | Wellington Laboratories, Lot FOSA0815I | | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL | | | | | |
| ..LCPFTeDA_00005 | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215 | | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL | | | | | |
| LCPFCL_FULL-L4_00008 | 12/27/17 | 07/07/17 | MeOH/H2O, Lot 090285 | 5000 uL | LCMPFC_ALL_SU_00001 | 250 uL | d-N-EtFOSA-M | 50 ng/mL | | | | | |
| | | | | | | | d-N-MeFOSA-M | 50 ng/mL | | | | | |
| | | | | | | | d3-NMeFOSAA | 50 ng/mL | | | | | |
| | | | | | | | d5-NEtFOSAA | 50 ng/mL | | | | | |
| | | | | | | | M2-6:2FTS | 47.5 ng/mL | | | | | |
| | | | | | | | M2-8:2FTS | 47.9 ng/mL | | | | | |
| | | | | | | | 13C2-PFHxDA | 50 ng/mL | | | | | |
| | | | | | | | 13C2-PFTeDA | 50 ng/mL | | | | | |
| | | | | | | | 13C4-PFHpA | 50 ng/mL | | | | | |
| | | | | | | | 13C5 PFPeA | 50 ng/mL | | | | | |
| | | | | | | | 13C8 FOSA | 50 ng/mL | | | | | |
| | | | | | | | 13C4 PFBA | 50 ng/mL | | | | | |
| | | | | | | | 13C2 PFDA | 50 ng/mL | | | | | |
| | | | | | | | 13C2 PFDoA | 50 ng/mL | | | | | |
| | | | | | | | 13C2 PFHxA | 50 ng/mL | | | | | |
| | | | | | | | 18O2 PFHxS | 47.3 ng/mL | | | | | |
| | | | | | | | 13C5 PFNA | 50 ng/mL | | | | | |
| | | | | | 13C4 PFOA | 50 ng/mL | | | | | | | |
| | | | | | 13C4 PFOS | 47.8 ng/mL | | | | | | | |
| | | | | | 13C2 PFUnA | 50 ng/mL | | | | | | | |
| | | | | | | | | | | LCPFC2SP_00037 | 100 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 18.68 ng/mL |
| | | | | | | | | | | | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 18.96 ng/mL |
| | | | | | | | | | | | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 19.16 ng/mL |
| | | | | | | | N-ethylperfluoro-1-octanesulfonamide | 20 ng/mL | | | | | |
| | | | | | | | N-ethyl perfluorooctane sulfonamidoacetic acid | 20 ng/mL | | | | | |
| | | | | | | | MeFOSA | 20 ng/mL | | | | | |
| | | | | | | | N-methyl perfluorooctane sulfonamidoacetic acid | 20 ng/mL | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------|----------|------------------------------------|----------------------------|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCPFCIS_00003 | 50 uL | 13C2-PFOA | 50 ng/mL |
| | | | | | LCPFCSP_00103 | 100 uL | Perfluorobutanoic acid (PFBA) | 20 ng/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 17.68 ng/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 20 ng/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 20 ng/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 19.28 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 20 ng/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 19.04 ng/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 20 ng/mL |
| | | | | | | | Perfluorohexadecanoic acid | 20 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 18.2 ng/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 20 ng/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 20 ng/mL |
| | | | | | | | Perfluorooctadecanoic acid | 20 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 18.56 ng/mL |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 20 ng/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 20 ng/mL |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 20 ng/mL |
| | | Perfluorotridecanoic Acid (PFTriA) | 20 ng/mL | | | | | |
| | | Perfluoroundecanoic acid (PFUnA) | 20 ng/mL | | | | | |
| .LCMPFC_ALL_SU_00001 | 12/29/17 | 06/29/17 | Methanol, Lot Baker 141039 | 10000 uL | LCd-NEtFOSA-M_00005 | 200 uL | d-N-EtFOSA-M | 1 ug/mL |
| | | | | | LCd-NMeFOSA-M_00004 | 200 uL | d-N-MeFOSA-M | 1 ug/mL |
| | | | | | LCd3-NMeFOSAA_00004 | 200 uL | d3-NMeFOSAA | 1 ug/mL |
| | | | | | LCd5-NEtFOSAA_00004 | 200 uL | d5-NEtFOSAA | 1 ug/mL |
| | | | | | LCM2-6:FtS_00004 | 200 uL | M2-6:2FtS | 0.95 ug/mL |
| | | | | | LCM2-8:2FtS_00004 | 200 uL | M2-8:2FtS | 0.958 ug/mL |
| | | | | | LCM2PFHxDA_00010 | 200 uL | 13C2-PFHxDA | 1 ug/mL |
| | | | | | LCM2PFTeDA_00009 | 200 uL | 13C2-PFTeDA | 1 ug/mL |
| | | | | | LCM4PFHPA_00009 | 200 uL | 13C4-PFHPA | 1 ug/mL |
| | | | | | LCM5PFPEA_00010 | 200 uL | 13C5 PFPeA | 1 ug/mL |
| | | | | | LCM8FOSA_00013 | 200 uL | 13C8 FOSA | 1 ug/mL |
| | | | | | LCMPFBA_00010 | 200 uL | 13C4 PFBA | 1 ug/mL |
| | | | | | LCMPFDA_00015 | 200 uL | 13C2 PFDA | 1 ug/mL |
| | | | | | LCMPFDoA_00010 | 200 uL | 13C2 PFDoA | 1 ug/mL |
| | | | | | LCMPFHxA_00016 | 200 uL | 13C2 PFHxA | 1 ug/mL |
| | | | | | LCMPFHxS_00010 | 200 uL | 18O2 PFHxS | 0.946 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|---|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCMPFNA_00010 | 200 uL | 13C5 PFNA | 1 ug/mL |
| | | | | | LCMPFOA_00014 | 200 uL | 13C4 PFOA | 1 ug/mL |
| | | | | | LCMPFOS_00022 | 200 uL | 13C4 PFOS | 0.956 ug/mL |
| | | | | | LCMPFUDa_00011 | 200 uL | 13C2 PFUnA | 1 ug/mL |
| ..LCd-NEtFOSA-M_00005 | 06/10/21 | | WELLINGTON, Lot dNEtFOSA0616M | | (Purchased Reagent) | | d-N-EtFOSA-M | 50 ug/mL |
| ..LCd-NMeFOSA-M_00004 | 06/10/21 | | WELLINGTON, Lot dNMeFOSA0616M | | (Purchased Reagent) | | d-N-MeFOSA-M | 50 ug/mL |
| ..LCd3-NMeFOSAA_00004 | 11/22/21 | | WELLINGTON, Lot d3NMeFOSAA1116 | | (Purchased Reagent) | | d3-NMeFOSAA | 50 ug/mL |
| ..LCd5-NEtFOSAA_00004 | 11/22/21 | | WELLINGTON, Lot d5NEtFOSAA1116 | | (Purchased Reagent) | | d5-NEtFOSAA | 50 ug/mL |
| ..LCM2-6:FtS_00004 | 02/17/22 | | WELLINGTON, Lot M262FtS0217 | | (Purchased Reagent) | | M2-6:2FtS | 47.5 ug/mL |
| ..LCM2-8:2FtS_00004 | 08/22/21 | | WELLINGTON, Lot M282FtS0816 | | (Purchased Reagent) | | M2-8:2FtS | 47.9 ug/mL |
| ..LCM2PFHxDA_00010 | 01/07/21 | | Wellington Laboratories, Lot M2PFHxDA1112 | | (Purchased Reagent) | | 13C2-PFHxDA | 50 ug/mL |
| ..LCM2PFtEDA_00009 | 12/07/20 | | Wellington Laboratories, Lot M2PFtEDA0217 | | (Purchased Reagent) | | 13C2-PFtEDA | 50 ug/mL |
| ..LCM4PFHPA_00009 | 05/27/21 | | Wellington Laboratories, Lot M4PFHPA0516 | | (Purchased Reagent) | | 13C4-PFHpA | 50 ug/mL |
| ..LCM5PFPEA_00010 | 11/22/21 | | Wellington Laboratories, Lot M5PFPeA1116 | | (Purchased Reagent) | | 13C5 PFPeA | 50 ug/mL |
| ..LCM8FOSA_00013 | 12/22/20 | | Wellington Laboratories, Lot M8FOSA1215I | | (Purchased Reagent) | | 13C8 FOSA | 50 ug/mL |
| ..LCMPFBA_00010 | 05/24/21 | | Wellington Laboratories, Lot MPFBA0516 | | (Purchased Reagent) | | 13C4 PFBA | 50 ug/mL |
| ..LCMPFDA_00015 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| ..LCMPFDoA_00010 | 04/08/21 | | Wellington Laboratories, Lot MPFDoA0416 | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL |
| ..LCMPFHxA_00016 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| ..LCMPFHxS_00010 | 02/17/22 | | Wellington Laboratories, Lot MPFHxS0217 | | (Purchased Reagent) | | 18O2 PFHxS | 47.3 ug/mL |
| ..LCMPFNA_00010 | 09/30/21 | | Wellington Laboratories, Lot MPFNA0916 | | (Purchased Reagent) | | 13C5 PFNA | 50 ug/mL |
| ..LCMPFOA_00014 | 04/12/22 | | Wellington Laboratories, Lot MPFOA0417 | | (Purchased Reagent) | | 13C4 PFOA | 50 ug/mL |
| ..LCMPFOS_00022 | 12/12/21 | | Wellington Laboratories, Lot MPFOS1216 | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| ..LCMPFUDa_00011 | 11/22/21 | | Wellington Laboratories, Lot MPFUDa1116 | | (Purchased Reagent) | | 13C2 PFUnA | 50 ug/mL |
| ..LCPFC2SP_00037 | 01/07/18 | 07/07/17 | Methanol, Lot 104453 | 10 mL | LC4:2FtS_00002 | 200 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.934 ug/mL |
| | | | | | LC6:2FtS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL |
| | | | | | LC8:2FtS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.958 ug/mL |
| | | | | | LCN-EtFOSA-M_00004 | 200 uL | N-ethylperfluoro-1-octanesulfo namide | 1 ug/mL |
| | | | | | LCN-EtFOSAA_00002 | 200 uL | N-ethyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| | | | | | LCN-MeFOSA-M_00003 | 200 uL | MeFOSA | 1 ug/mL |
| | | | | | LCN-MeFOSAA_00003 | 200 uL | N-methyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| ..LC4:2FtS_00002 | 12/12/21 | | WELLINGTON, Lot 42FtS1216 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 46.7 ug/mL |
| ..LC6:2FtS_00003 | 06/25/21 | | WELLINGTON, Lot 62FtS0616 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL |
| ..LC8:2FtS_00003 | 08/22/21 | | WELLINGTON, Lot 82FtS0816 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 47.9 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------|----------|-----------|---|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCN-EtFOSA-M_00004 | 05/24/21 | | WELLINGTON, Lot NETFOSA0516M | | (Purchased Reagent) | | N-ethylperfluoro-1-octanesulfo namide | 50 ug/mL |
| ..LCN-EtFOSAA_00002 | 01/20/21 | | WELLINGTON, Lot NETFOSAA0116 | | (Purchased Reagent) | | N-ethyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ..LCN-MeFOSA-M_00003 | 05/24/21 | | WELLINGTON, Lot NMeFOSA0516M | | (Purchased Reagent) | | MeFOSA | 50 ug/mL |
| ..LCN-MeFOSAA_00003 | 01/20/21 | | WELLINGTON, Lot NMeFOSAA0116 | | (Purchased Reagent) | | N-methyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| .LCPFCIS_00003 | 12/30/17 | 06/30/17 | Methanol, Lot 14139 | 5000 uL | LCM2PFOA_00005 | 500 uL | 13C2-PFOA | 5 ug/mL |
| ..LCM2PFOA_00005 | 06/19/18 | | Wellington Laboratories, Lot M2PFOA0613 | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL |
| .LCPFCSP_00103 | 12/27/17 | 06/27/17 | Methanol, Lot 090285 | 10000 uL | LCPFBA_00006 | 200 uL | Perfluorobutanoic acid (PFBA) | 1 ug/mL |
| | | | | | LCPFBS_00006 | 200 uL | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL |
| | | | | | LCPFDA_00006 | 200 uL | Perfluorodecanoic acid (PFDA) | 1 ug/mL |
| | | | | | LCPFDoA_00006 | 200 uL | Perfluorododecanoic acid (PFDoA) | 1 ug/mL |
| | | | | | LCPFDS_00005 | 200 uL | Perfluorodecanesulfonic acid (PFDS) | 0.964 ug/mL |
| | | | | | LCPFHpA_00006 | 200 uL | Perfluoroheptanoic acid (PFHpA) | 1 ug/mL |
| | | | | | LCPFHpS_00010 | 200 uL | Perfluoroheptanesulfonic Acid (PFHpS) | 0.952 ug/mL |
| | | | | | LCPFHxA_00005 | 200 uL | Perfluorohexanoic acid (PFHxA) | 1 ug/mL |
| | | | | | LCPFHxDA_00007 | 200 uL | Perfluorohexadecanoic acid | 1 ug/mL |
| | | | | | LCPFHxS-br_00003 | 200 uL | Perfluorohexanesulfonic acid (PFHxS) | 0.91 ug/mL |
| | | | | | LCPFNA_00007 | 200 uL | Perfluorononanoic acid (PFNA) | 1 ug/mL |
| | | | | | LCPFOA_00007 | 200 uL | Perfluorooctanoic acid (PFOA) | 1 ug/mL |
| | | | | | LCPFODA_00007 | 200 uL | Perfluorooctadecanoic acid | 1 ug/mL |
| | | | | | LCPFOS-br_00003 | 200 uL | Perfluorooctanesulfonic acid (PFOS) | 0.928 ug/mL |
| | | | | | LCPFOSA_00010 | 200 uL | Perfluorooctane Sulfonamide (FOSA) | 1 ug/mL |
| | | | | | LCPFPeA_00006 | 200 uL | Perfluoropentanoic acid (PFPeA) | 1 ug/mL |
| | | | | | LCPFTeDA_00005 | 200 uL | Perfluorotetradecanoic acid (PFTeA) | 1 ug/mL |
| | | | | | LCPFTrDA_00005 | 200 uL | Perfluorotridecanoic Acid (PFTriA) | 1 ug/mL |
| | | | | | LCPFUdA_00006 | 200 uL | Perfluoroundecanoic acid (PFUnA) | 1 ug/mL |
| ..LCPFBA_00006 | 05/27/21 | | Wellington Laboratories, Lot PFBA0516 | | (Purchased Reagent) | | Perfluorobutanoic acid (PFBA) | 50 ug/mL |
| ..LCPFBS_00006 | 03/15/21 | | Wellington Laboratories, Lot LPFBS0316 | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ..LCPFDA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFDA0516 | | (Purchased Reagent) | | Perfluorodecanoic acid (PFDA) | 50 ug/mL |
| ..LCPFDoA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFDoA0516 | | (Purchased Reagent) | | Perfluorododecanoic acid (PFDoA) | 50 ug/mL |
| ..LCPFDS_00005 | 07/02/20 | | Wellington Laboratories, Lot LPFDS0615 | | (Purchased Reagent) | | Perfluorodecanesulfonic acid (PFDS) | 48.2 ug/mL |
| ..LCPFHpA_00006 | 01/22/21 | | Wellington Laboratories, Lot PFHpA0116 | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------------|----------|---|----------------------------|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCPFHps_00010 | 11/06/20 | Wellington Laboratories, Lot LPPHps1115 | | | (Purchased Reagent) | | Perfluoroheptanesulfonic Acid (PFHps) | 47.6 ug/mL |
| ..LCPFHxA 00005 | 12/22/20 | Wellington Laboratories, Lot PFHxA1215 | | | (Purchased Reagent) | | Perfluorohexanoic acid (PFHxA) | 50 ug/mL |
| ..LCPFHxDA 00007 | 05/25/21 | Wellington Laboratories, Lot PFHxDA0516 | | | (Purchased Reagent) | | Perfluorohexadecanoic acid | 50 ug/mL |
| ..LCPFHxS-br_00003 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 | | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ..LCPFNA 00007 | 10/23/20 | Wellington Laboratories, Lot PFNA1015 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ..LCPFOA 00007 | 08/02/21 | Wellington Laboratories, Lot PFOA0716 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| ..LCPFODA 00007 | 04/29/21 | Wellington Laboratories, Lot PFOA0416 | | | (Purchased Reagent) | | Perfluorooctadecanoic acid | 50 ug/mL |
| ..LCPFOS-br_00003 | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015 | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| ..LCPFOSA_00010 | 09/30/21 | Wellington Laboratories, Lot FOSA0916I | | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| ..LCPFPeA_00006 | 05/31/21 | Wellington Laboratories, Lot PFPeA0516 | | | (Purchased Reagent) | | Perfluoropentanoic acid (PFPeA) | 50 ug/mL |
| ..LCPFTeDA_00005 | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215 | | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| ..LCPFTrDA_00005 | 02/12/21 | Wellington Laboratories, Lot PFTrDA0216 | | | (Purchased Reagent) | | Perfluorotridecanoic Acid (PFTriA) | 50 ug/mL |
| ..LCPFUdA_00006 | 08/19/20 | Wellington Laboratories, Lot PFUdA0815 | | | (Purchased Reagent) | | Perfluoroundecanoic acid (PFUnA) | 50 ug/mL |
| LCPFC_FULL-L5_00005 | 09/02/17 | 05/30/17 | MeOH/H2O, Lot 090285 | 5000 uL | LCMPFCSU_00069 | 250 uL | 13C8 FOSA | 50 ng/mL |
| | | | | | | | 13C2 PFDoA | 50 ng/mL |
| | | | | | LCPFCSP_00096 | 250 uL | Perfluorooctane Sulfonamide (FOSA) | 50 ng/mL |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 50 ng/mL |
| .LCMPFCSU_00069 | 11/24/17 | 05/24/17 | Methanol, Lot Baker 141039 | 10000 uL | LCM8FOSA_00012 | 200 uL | 13C8 FOSA | 1 ug/mL |
| | | | | | LCPMFDoA_00009 | 200 uL | 13C2 PFDoA | 1 ug/mL |
| ..LCM8FOSA_00012 | 12/22/20 | Wellington Laboratories, Lot M8FOSA1215I | | | (Purchased Reagent) | | 13C8 FOSA | 50 ug/mL |
| ..LCPMFDoA_00009 | 04/08/21 | Wellington Laboratories, Lot MPFDoA0416 | | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL |
| .LCPFCSP_00096 | 09/02/17 | 05/24/17 | Methanol, Lot 090285 | 10000 uL | LCPFOSA_00009 | 200 uL | Perfluorooctane Sulfonamide (FOSA) | 1 ug/mL |
| | | | | | LCPFTeDA_00005 | 200 uL | Perfluorotetradecanoic acid (PFTeA) | 1 ug/mL |
| ..LCPFOSA_00009 | 09/02/17 | Wellington Laboratories, Lot FOSA0815I | | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| ..LCPFTeDA_00005 | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215 | | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| LCPFC_FULL-L5_00008 | 12/27/17 | 07/07/17 | MeOH/H2O, Lot 090285 | 5000 uL | LCMPFC_ALL_SU_00001 | 250 uL | d-N-EtFOSA-M | 50 ng/mL |
| | | | | | | | d-N-MeFOSA-M | 50 ng/mL |
| | | | | | | | d3-NMeFOSAA | 50 ng/mL |
| | | | | | | | d5-NEtFOSAA | 50 ng/mL |
| | | | | | | | M2-6:2FTS | 47.5 ng/mL |
| | | | | | | | M2-8:2FTS | 47.9 ng/mL |
| | | | | | | | 13C2-PFHxDA | 50 ng/mL |
| | | | | | | | 13C2-PFTeDA | 50 ng/mL |
| 13C4-PFHpa | 50 ng/mL | | | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|------------|----------|-----------|---------------|----------------------|----------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | 13C5 PFPeA | 50 ng/mL |
| | | | | | | | 13C8 FOSA | 50 ng/mL |
| | | | | | | | 13C4 PFBA | 50 ng/mL |
| | | | | | | | 13C2 PFDA | 50 ng/mL |
| | | | | | | | 13C2 PFDaA | 50 ng/mL |
| | | | | | | | 13C2 PFHxA | 50 ng/mL |
| | | | | | | | 18O2 PFHxS | 47.3 ng/mL |
| | | | | | | | 13C5 PFNA | 50 ng/mL |
| | | | | | | | 13C4 PFOA | 50 ng/mL |
| | | | | | | | 13C4 PFOS | 47.8 ng/mL |
| | | | | | | | 13C2 PFUnA | 50 ng/mL |
| | | | | | LCPFC2SP_00037 | 250 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 46.7 ng/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ng/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 47.9 ng/mL |
| | | | | | | | N-ethylperfluoro-1-octanesulfo namide | 50 ng/mL |
| | | | | | | | N-ethyl perfluorooctane sulfonamidoacetic acid | 50 ng/mL |
| | | | | | | | MeFOSA | 50 ng/mL |
| | | | | | | | N-methyl perfluorooctane sulfonamidoacetic acid | 50 ng/mL |
| | | | | | LCPFCIS_00003 | 50 uL | 13C2-PFOA | 50 ng/mL |
| | | | | | LCPFCSP_00103 | 250 uL | Perfluorobutanoic acid (PFBA) | 50 ng/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ng/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 50 ng/mL |
| | | | | | | | Perfluorododecanoic acid (PFDaA) | 50 ng/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 48.2 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 50 ng/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ng/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 50 ng/mL |
| | | | | | | | Perfluorohexadecanoic acid | 50 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ng/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 50 ng/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 50 ng/mL |
| | | | | | | | Perfluorooctadecanoic acid | 50 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|---|----------------------|---------------------|--------------|-------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 50 ng/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 50 ng/mL |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 50 ng/mL |
| | | | | | | | Perfluorotridecanoic Acid (PFTriA) | 50 ng/mL |
| | | | | | | | Perfluoroundecanoic acid (PFUnA) | 50 ng/mL |
| .LCMPFC_ALL_SU_00001 | 12/29/17 | 06/29/17 | Methanol, Lot Baker 141039 | 10000 uL | LCd-NETFOSA-M_00005 | 200 uL | d-N-EtFOSA-M | 1 ug/mL |
| | | | | | LCd-NMeFOSA-M_00004 | 200 uL | d-N-MeFOSA-M | 1 ug/mL |
| | | | | | LCd3-NMeFOSAA_00004 | 200 uL | d3-NMeFOSAA | 1 ug/mL |
| | | | | | LCd5-NETFOSAA_00004 | 200 uL | d5-NETFOSAA | 1 ug/mL |
| | | | | | LCM2-6:FtS_00004 | 200 uL | M2-6:2FtS | 0.95 ug/mL |
| | | | | | LCM2-8:2FtS_00004 | 200 uL | M2-8:2FtS | 0.958 ug/mL |
| | | | | | LCM2PFHxDA_00010 | 200 uL | 13C2-PFHxDA | 1 ug/mL |
| | | | | | LCM2PFTeDA_00009 | 200 uL | 13C2-PFTeDA | 1 ug/mL |
| | | | | | LCM4PFHPA_00009 | 200 uL | 13C4-PFHpa | 1 ug/mL |
| | | | | | LCM5PFPEA_00010 | 200 uL | 13C5 PFPeA | 1 ug/mL |
| | | | | | LCM8FOSA_00013 | 200 uL | 13C8 FOSA | 1 ug/mL |
| | | | | | LCMPFBA_00010 | 200 uL | 13C4 PFBA | 1 ug/mL |
| | | | | | LCMPFDA_00015 | 200 uL | 13C2 PFDA | 1 ug/mL |
| | | | | | LCMPFDoA_00010 | 200 uL | 13C2 PFDoA | 1 ug/mL |
| | | | | | LCMPFHxA_00016 | 200 uL | 13C2 PFHxA | 1 ug/mL |
| | | | | | LCMPFHxS_00010 | 200 uL | 18O2 PFHxS | 0.946 ug/mL |
| | | | | | LCMPFNA_00010 | 200 uL | 13C5 PFNA | 1 ug/mL |
| | | | | | LCMPFOA_00014 | 200 uL | 13C4 PFOA | 1 ug/mL |
| | | | | | LCMPFOS_00022 | 200 uL | 13C4 PFOS | 0.956 ug/mL |
| | | | | | LCMPFUdA_00011 | 200 uL | 13C2 PFUnA | 1 ug/mL |
| ..LCd-NETFOSA-M_00005 | 06/10/21 | | WELLINGTON, Lot dNetFOSA0616M | | (Purchased Reagent) | | d-N-EtFOSA-M | 50 ug/mL |
| ..LCd-NMeFOSA-M_00004 | 06/10/21 | | WELLINGTON, Lot dNMeFOSA0616M | | (Purchased Reagent) | | d-N-MeFOSA-M | 50 ug/mL |
| ..LCd3-NMeFOSAA_00004 | 11/22/21 | | WELLINGTON, Lot d3NMeFOSAA1116 | | (Purchased Reagent) | | d3-NMeFOSAA | 50 ug/mL |
| ..LCd5-NETFOSAA_00004 | 11/22/21 | | WELLINGTON, Lot d5NETFOSAA1116 | | (Purchased Reagent) | | d5-NETFOSAA | 50 ug/mL |
| ..LCM2-6:FtS_00004 | 02/17/22 | | WELLINGTON, Lot M262FtS0217 | | (Purchased Reagent) | | M2-6:2FtS | 47.5 ug/mL |
| ..LCM2-8:2FtS_00004 | 08/22/21 | | WELLINGTON, Lot M282FtS0816 | | (Purchased Reagent) | | M2-8:2FtS | 47.9 ug/mL |
| ..LCM2PFHxDA_00010 | 01/07/21 | | Wellington Laboratories, Lot M2PFHxDA1112 | | (Purchased Reagent) | | 13C2-PFHxDA | 50 ug/mL |
| ..LCM2PFTeDA_00009 | 12/07/20 | | Wellington Laboratories, Lot M2PFTeDA0217 | | (Purchased Reagent) | | 13C2-PFTeDA | 50 ug/mL |
| ..LCM4PFHPA_00009 | 05/27/21 | | Wellington Laboratories, Lot M4PFHpa0516 | | (Purchased Reagent) | | 13C4-PFHpa | 50 ug/mL |
| ..LCM5PFPEA_00010 | 11/22/21 | | Wellington Laboratories, Lot M5PFPeA1116 | | (Purchased Reagent) | | 13C5 PFPeA | 50 ug/mL |
| ..LCM8FOSA_00013 | 12/22/20 | | Wellington Laboratories, Lot M8FOSA1215I | | (Purchased Reagent) | | 13C8 FOSA | 50 ug/mL |
| ..LCMPFBA_00010 | 05/24/21 | | Wellington Laboratories, Lot MPFBA0516 | | (Purchased Reagent) | | 13C4 PFBA | 50 ug/mL |
| ..LCMPFDA_00015 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| ..LCMPFDoA_00010 | 04/08/21 | | Wellington Laboratories, Lot MPFDoA0416 | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL |
| ..LCMPFHxA_00016 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| ..LCMPFHxS_00010 | 02/17/22 | | Wellington Laboratories, Lot MPFHxS0217 | | (Purchased Reagent) | | 18O2 PFHxS | 47.3 ug/mL |
| ..LCMPFNA_00010 | 09/30/21 | | Wellington Laboratories, Lot MPFNA0916 | | (Purchased Reagent) | | 13C5 PFNA | 50 ug/mL |
| ..LCMPFOA_00014 | 04/12/22 | | Wellington Laboratories, Lot MPFOA0417 | | (Purchased Reagent) | | 13C4 PFOA | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------|----------|-----------|---|----------------------|--------------------|---------------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCMPFOS_00022 | 12/12/21 | | Wellington Laboratories, Lot MPFOS1216 | | | (Purchased Reagent) | 13C4 PFOS | 47.8 ug/mL |
| ..LCMPFUDa_00011 | 11/22/21 | | Wellington Laboratories, Lot MPFUDa1116 | | | (Purchased Reagent) | 13C2 PFUnA | 50 ug/mL |
| .LCPFC2SP_00037 | 01/07/18 | 07/07/17 | Methanol, Lot 104453 | 10 mL | LC4:2FTS_00002 | 200 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.934 ug/mL |
| | | | | | LC6:2FTS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL |
| | | | | | LC8:2FTS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.958 ug/mL |
| | | | | | LCN-EtFOSA-M_00004 | 200 uL | N-ethylperfluoro-1-octanesulfo namide | 1 ug/mL |
| | | | | | LCN-EtFOSAA_00002 | 200 uL | N-ethyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| | | | | | LCN-MeFOSA-M_00003 | 200 uL | MeFOSA | 1 ug/mL |
| | | | | | LCN-MeFOSAA_00003 | 200 uL | N-methyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| ..LC4:2FTS_00002 | 12/12/21 | | WELLINGTON, Lot 42FTS1216 | | | (Purchased Reagent) | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 46.7 ug/mL |
| ..LC6:2FTS_00003 | 06/25/21 | | WELLINGTON, Lot 62FTS0616 | | | (Purchased Reagent) | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL |
| ..LC8:2FTS_00003 | 08/22/21 | | WELLINGTON, Lot 82FTS0816 | | | (Purchased Reagent) | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 47.9 ug/mL |
| ..LCN-EtFOSA-M_00004 | 05/24/21 | | WELLINGTON, Lot NETFOSA0516M | | | (Purchased Reagent) | N-ethylperfluoro-1-octanesulfo namide | 50 ug/mL |
| ..LCN-EtFOSAA_00002 | 01/20/21 | | WELLINGTON, Lot NETFOSAA0116 | | | (Purchased Reagent) | N-ethyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ..LCN-MeFOSA-M_00003 | 05/24/21 | | WELLINGTON, Lot NMeFOSA0516M | | | (Purchased Reagent) | MeFOSA | 50 ug/mL |
| ..LCN-MeFOSAA_00003 | 01/20/21 | | WELLINGTON, Lot NMeFOSAA0116 | | | (Purchased Reagent) | N-methyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| .LCPFCIS_00003 | 12/30/17 | 06/30/17 | Methanol, Lot 14139 | 5000 uL | LCM2PFOA_00005 | 500 uL | 13C2-PFOA | 5 ug/mL |
| ..LCM2PFOA_00005 | 06/19/18 | | Wellington Laboratories, Lot M2PFOA0613 | | | (Purchased Reagent) | 13C2-PFOA | 50 ug/mL |
| .LCPFCSP_00103 | 12/27/17 | 06/27/17 | Methanol, Lot 090285 | 10000 uL | LCPFBA_00006 | 200 uL | Perfluorobutanoic acid (PFBA) | 1 ug/mL |
| | | | | | LCPFBS_00006 | 200 uL | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL |
| | | | | | LCPFDA_00006 | 200 uL | Perfluorodecanoic acid (PFDA) | 1 ug/mL |
| | | | | | LCPFDoA_00006 | 200 uL | Perfluorododecanoic acid (PFDoA) | 1 ug/mL |
| | | | | | LCPFDS_00005 | 200 uL | Perfluorodecanesulfonic acid (PFDS) | 0.964 ug/mL |
| | | | | | LCPFHpA_00006 | 200 uL | Perfluoroheptanoic acid (PFHpA) | 1 ug/mL |
| | | | | | LCPFHpS_00010 | 200 uL | Perfluoroheptanesulfonic Acid (PFHpS) | 0.952 ug/mL |
| | | | | | LCPFHxA_00005 | 200 uL | Perfluorohexanoic acid (PFHxA) | 1 ug/mL |
| | | | | | LCPFHxDA_00007 | 200 uL | Perfluorohexadecanoic acid | 1 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------------|----------|---|----------------------|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCPFHxS-br_00003 | 200 uL | Perfluorohexanesulfonic acid (PFHxS) | 0.91 ug/mL |
| | | | | | LCPFNA_00007 | 200 uL | Perfluorononanoic acid (PFNA) | 1 ug/mL |
| | | | | | LCPFOA_00007 | 200 uL | Perfluorooctanoic acid (PFOA) | 1 ug/mL |
| | | | | | LCPFODA_00007 | 200 uL | Perfluorooctadecanoic acid | 1 ug/mL |
| | | | | | LCPFOS-br_00003 | 200 uL | Perfluorooctanesulfonic acid (PFOS) | 0.928 ug/mL |
| | | | | | LCPFOSA_00010 | 200 uL | Perfluorooctane Sulfonamide (FOSA) | 1 ug/mL |
| | | | | | LCPFPeA_00006 | 200 uL | Perfluoropentanoic acid (PFPeA) | 1 ug/mL |
| | | | | | LCPFTeDA_00005 | 200 uL | Perfluorotetradecanoic acid (PFTeA) | 1 ug/mL |
| | | | | | LCPFTrDA_00005 | 200 uL | Perfluorotridecanoic Acid (PFTriA) | 1 ug/mL |
| | | | | | LCPFUDA_00006 | 200 uL | Perfluoroundecanoic acid (PFUnA) | 1 ug/mL |
| ..LCPFBA_00006 | 05/27/21 | Wellington Laboratories, Lot PFBA0516 | | | (Purchased Reagent) | | Perfluorobutanoic acid (PFBA) | 50 ug/mL |
| ..LCPFBS_00006 | 03/15/21 | Wellington Laboratories, Lot LPFBS0316 | | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ..LCPFDA_00006 | 05/31/21 | Wellington Laboratories, Lot PFDA0516 | | | (Purchased Reagent) | | Perfluorodecanoic acid (PFDA) | 50 ug/mL |
| ..LCPFDoA_00006 | 05/31/21 | Wellington Laboratories, Lot PFDoA0516 | | | (Purchased Reagent) | | Perfluorododecanoic acid (PFDoA) | 50 ug/mL |
| ..LCPFDS_00005 | 07/02/20 | Wellington Laboratories, Lot LPFDS0615 | | | (Purchased Reagent) | | Perfluorodecanesulfonic acid (PFDS) | 48.2 ug/mL |
| ..LCPFHpA_00006 | 01/22/21 | Wellington Laboratories, Lot PFHpA0116 | | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| ..LCPFHpS_00010 | 11/06/20 | Wellington Laboratories, Lot LPFHps1115 | | | (Purchased Reagent) | | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ug/mL |
| ..LCPFHxA_00005 | 12/22/20 | Wellington Laboratories, Lot PFHxA1215 | | | (Purchased Reagent) | | Perfluorohexanoic acid (PFHxA) | 50 ug/mL |
| ..LCPFHxDA_00007 | 05/25/21 | Wellington Laboratories, Lot PFHxDA0516 | | | (Purchased Reagent) | | Perfluorohexadecanoic acid | 50 ug/mL |
| ..LCPFHxS-br_00003 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 | | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ..LCPFNA_00007 | 10/23/20 | Wellington Laboratories, Lot PFNA1015 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ..LCPFOA_00007 | 08/02/21 | Wellington Laboratories, Lot PFOA0716 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| ..LCPFODA_00007 | 04/29/21 | Wellington Laboratories, Lot PFODA0416 | | | (Purchased Reagent) | | Perfluorooctadecanoic acid | 50 ug/mL |
| ..LCPFOS-br_00003 | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015 | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| ..LCPFOSA_00010 | 09/30/21 | Wellington Laboratories, Lot FOSA0916I | | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| ..LCPFPeA_00006 | 05/31/21 | Wellington Laboratories, Lot PFPeA0516 | | | (Purchased Reagent) | | Perfluoropentanoic acid (PFPeA) | 50 ug/mL |
| ..LCPFTeDA_00005 | 12/09/20 | Wellington Laboratories, Lot PFTeDA1215 | | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| ..LCPFTrDA_00005 | 02/12/21 | Wellington Laboratories, Lot PFTTrDA0216 | | | (Purchased Reagent) | | Perfluorotridecanoic Acid (PFTriA) | 50 ug/mL |
| ..LCPFUDA_00006 | 08/19/20 | Wellington Laboratories, Lot PFUDA0815 | | | (Purchased Reagent) | | Perfluoroundecanoic acid (PFUnA) | 50 ug/mL |
| LCPFC_FULL-L6_00006 | 12/27/17 | 07/07/17 | MeOH/H2O, Lot 090285 | 5000 uL | LCPMFC_ALL_SU_00001 | 250 uL | d-N-EtFOSA-M | 50 ng/mL |
| | | | | | | | d-N-MeFOSA-M | 50 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|------------|----------|-----------|---------------|----------------------|----------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | d3-NMeFOSAA | 50 ng/mL |
| | | | | | | | d5-NetFOSAA | 50 ng/mL |
| | | | | | | | M2-6:2FTS | 47.5 ng/mL |
| | | | | | | | M2-8:2FTS | 47.9 ng/mL |
| | | | | | | | 13C2-PFHxDA | 50 ng/mL |
| | | | | | | | 13C2-PFTeDA | 50 ng/mL |
| | | | | | | | 13C4-PFHpA | 50 ng/mL |
| | | | | | | | 13C5 PFPeA | 50 ng/mL |
| | | | | | | | 13C8 FOSA | 50 ng/mL |
| | | | | | | | 13C4 PFBA | 50 ng/mL |
| | | | | | | | 13C2 PFDA | 50 ng/mL |
| | | | | | | | 13C2 PFDoA | 50 ng/mL |
| | | | | | | | 13C2 PFHxA | 50 ng/mL |
| | | | | | | | 1802 PFHxS | 47.3 ng/mL |
| | | | | | | | 13C5 PFNA | 50 ng/mL |
| | | | | | | | 13C4 PFOA | 50 ng/mL |
| | | | | | | | 13C4 PFOS | 47.8 ng/mL |
| | | | | | | | 13C2 PFUnA | 50 ng/mL |
| | | | | | LCPFC2SP_00037 | 500 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 93.4 ng/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 94.8 ng/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 95.8 ng/mL |
| | | | | | | | N-ethylperfluoro-1-octanesulfo namide | 100 ng/mL |
| | | | | | | | N-ethyl perfluorooctane sulfonamidoacetic acid | 100 ng/mL |
| | | | | | | | MeFOSA | 100 ng/mL |
| | | | | | | | N-methyl perfluorooctane sulfonamidoacetic acid | 100 ng/mL |
| | | | | | LCPFCIS_00003 | 50 uL | 13C2-PFOA | 50 ng/mL |
| | | | | | LCPFCSP_00103 | 500 uL | Perfluorobutanoic acid (PFBA) | 100 ng/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 88.4 ng/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 100 ng/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 100 ng/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 96.4 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 100 ng/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 95.2 ng/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 100 ng/mL |
| | | | | | | | Perfluorohexadecanoic acid | 100 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | |
|-----------------------|----------|-----------|---|----------------------|---------------------|--------------|--------------------------------------|---------------|------------|
| | | | | | Reagent ID | Volume Added | | | |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 91 ng/mL | |
| | | | | | | | Perfluorononanoic acid (PFNA) | 100 ng/mL | |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 100 ng/mL | |
| | | | | | | | Perfluorooctadecanoic acid | 100 ng/mL | |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 92.8 ng/mL | |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 100 ng/mL | |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 100 ng/mL | |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 100 ng/mL | |
| | | | | | | | Perfluorotridecanoic Acid (PFTriA) | 100 ng/mL | |
| | | | | | | | Perfluoroundecanoic acid (PFUnA) | 100 ng/mL | |
| .LCMPFC_ALL_SU_00001 | 12/29/17 | 06/29/17 | Methanol, Lot Baker 141039 | 10000 uL | LCd-NETfOSA-M_00005 | 200 uL | d-N-EtFOSA-M | 1 ug/mL | |
| | | | | | LCd-NMeFOSA-M_00004 | 200 uL | d-N-MeFOSA-M | 1 ug/mL | |
| | | | | | LCd3-NMeFOSAA_00004 | 200 uL | d3-NMeFOSAA | 1 ug/mL | |
| | | | | | LCd5-NETfOSAA_00004 | 200 uL | d5-NETfOSAA | 1 ug/mL | |
| | | | | | LCM2-6:FTS_00004 | 200 uL | M2-6:2FTS | 0.95 ug/mL | |
| | | | | | LCM2-8:2FTS_00004 | 200 uL | M2-8:2FTS | 0.958 ug/mL | |
| | | | | | LCM2PFHxDA_00010 | 200 uL | 13C2-PFHxDA | 1 ug/mL | |
| | | | | | LCM2PFTeDA_00009 | 200 uL | 13C2-PFTeDA | 1 ug/mL | |
| | | | | | LCM4PFHPA_00009 | 200 uL | 13C4-PFHpa | 1 ug/mL | |
| | | | | | LCM5PFPEA_00010 | 200 uL | 13C5 PFPeA | 1 ug/mL | |
| | | | | | LCM8FOSA_00013 | 200 uL | 13C8 FOSA | 1 ug/mL | |
| | | | | | LCMPFBA_00010 | 200 uL | 13C4 PFBA | 1 ug/mL | |
| | | | | | LCMPFDA_00015 | 200 uL | 13C2 PFDA | 1 ug/mL | |
| | | | | | LCMPFDoA_00010 | 200 uL | 13C2 PFDoA | 1 ug/mL | |
| | | | | | LCMPFHxA_00016 | 200 uL | 13C2 PFHxA | 1 ug/mL | |
| | | | | | LCMPFHxS_00010 | 200 uL | 1802 PFHxS | 0.946 ug/mL | |
| | | | | | LCMPFNA_00010 | 200 uL | 13C5 PFNA | 1 ug/mL | |
| | | | | | LCMPFOA_00014 | 200 uL | 13C4 PFOA | 1 ug/mL | |
| | | | | | LCMPFOS_00022 | 200 uL | 13C4 PFOS | 0.956 ug/mL | |
| | | | | | LCMPFUdA_00011 | 200 uL | 13C2 PFUnA | 1 ug/mL | |
| ..LCd-NETfOSA-M_00005 | 06/10/21 | | WELLINGTON, Lot dNetFOSA0616M | | | | (Purchased Reagent) | d-N-EtFOSA-M | 50 ug/mL |
| ..LCd-NMeFOSA-M_00004 | 06/10/21 | | WELLINGTON, Lot dNMeFOSA0616M | | | | (Purchased Reagent) | d-N-MeFOSA-M | 50 ug/mL |
| ..LCd3-NMeFOSAA_00004 | 11/22/21 | | WELLINGTON, Lot d3NMeFOSAA1116 | | | | (Purchased Reagent) | d3-NMeFOSAA | 50 ug/mL |
| ..LCd5-NETfOSAA_00004 | 11/22/21 | | WELLINGTON, Lot d5NetFOSAA1116 | | | | (Purchased Reagent) | d5-NETfOSAA | 50 ug/mL |
| ..LCM2-6:FTS_00004 | 02/17/22 | | WELLINGTON, Lot M262FTS0217 | | | | (Purchased Reagent) | M2-6:2FTS | 47.5 ug/mL |
| ..LCM2-8:2FTS_00004 | 08/22/21 | | WELLINGTON, Lot M282FTS0816 | | | | (Purchased Reagent) | M2-8:2FTS | 47.9 ug/mL |
| ..LCM2PFHxDA_00010 | 01/07/21 | | Wellington Laboratories, Lot M2PFHxDA1112 | | | | (Purchased Reagent) | 13C2-PFHxDA | 50 ug/mL |
| ..LCM2PFTeDA_00009 | 12/07/20 | | Wellington Laboratories, Lot M2PFTeDA0217 | | | | (Purchased Reagent) | 13C2-PFTeDA | 50 ug/mL |
| ..LCM4PFHPA_00009 | 05/27/21 | | Wellington Laboratories, Lot M4PFHPA0516 | | | | (Purchased Reagent) | 13C4-PFHpa | 50 ug/mL |
| ..LCM5PFPEA_00010 | 11/22/21 | | Wellington Laboratories, Lot M5PFPeA1116 | | | | (Purchased Reagent) | 13C5 PFPeA | 50 ug/mL |
| ..LCM8FOSA_00013 | 12/22/20 | | Wellington Laboratories, Lot M8FOSA1215I | | | | (Purchased Reagent) | 13C8 FOSA | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------|----------|-----------|---|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCMPFBA 00010 | 05/24/21 | | Wellington Laboratories, Lot MPFBA0516 | | (Purchased Reagent) | | 13C4 PFBA | 50 ug/mL |
| ..LCMPFDA 00015 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| ..LCMPFDoA 00010 | 04/08/21 | | Wellington Laboratories, Lot MPFDoA0416 | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL |
| ..LCMPFHxA 00016 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| ..LCMPFHxS 00010 | 02/17/22 | | Wellington Laboratories, Lot MPFHxS0217 | | (Purchased Reagent) | | 18O2 PFHxS | 47.3 ug/mL |
| ..LCMPFNA 00010 | 09/30/21 | | Wellington Laboratories, Lot MPFNA0916 | | (Purchased Reagent) | | 13C5 PFNA | 50 ug/mL |
| ..LCMPFOA 00014 | 04/12/22 | | Wellington Laboratories, Lot MPFOA0417 | | (Purchased Reagent) | | 13C4 PFOA | 50 ug/mL |
| ..LCMPFOS 00022 | 12/12/21 | | Wellington Laboratories, Lot MPFOS1216 | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| ..LCMPFudA 00011 | 11/22/21 | | Wellington Laboratories, Lot MPFudA1116 | | (Purchased Reagent) | | 13C2 PFUnA | 50 ug/mL |
| ..LCPFC2SP_00037 | 01/07/18 | 07/07/17 | Methanol, Lot 104453 | 10 mL | LC4:2FTS_00002 | 200 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.934 ug/mL |
| | | | | | LC6:2FTS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL |
| | | | | | LC8:2FTS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.958 ug/mL |
| | | | | | LCN-EtFOSA-M_00004 | 200 uL | N-ethylperfluoro-1-octanesulfo namide | 1 ug/mL |
| | | | | | LCN-EtFOSAA_00002 | 200 uL | N-ethyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| | | | | | LCN-MeFOSA-M_00003 | 200 uL | MeFOSA | 1 ug/mL |
| | | | | | LCN-MeFOSAA_00003 | 200 uL | N-methyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| ..LC4:2FTS_00002 | 12/12/21 | | WELLINGTON, Lot 42FTS1216 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 46.7 ug/mL |
| ..LC6:2FTS_00003 | 06/25/21 | | WELLINGTON, Lot 62FTS0616 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL |
| ..LC8:2FTS_00003 | 08/22/21 | | WELLINGTON, Lot 82FTS0816 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 47.9 ug/mL |
| ..LCN-EtFOSA-M_00004 | 05/24/21 | | WELLINGTON, Lot NETFOSA0516M | | (Purchased Reagent) | | N-ethylperfluoro-1-octanesulfo namide | 50 ug/mL |
| ..LCN-EtFOSAA_00002 | 01/20/21 | | WELLINGTON, Lot NETFOSAA0116 | | (Purchased Reagent) | | N-ethyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ..LCN-MeFOSA-M_00003 | 05/24/21 | | WELLINGTON, Lot NMeFOSA0516M | | (Purchased Reagent) | | MeFOSA | 50 ug/mL |
| ..LCN-MeFOSAA_00003 | 01/20/21 | | WELLINGTON, Lot NMeFOSAA0116 | | (Purchased Reagent) | | N-methyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ..LCPFCIS 00003 | 12/30/17 | 06/30/17 | Methanol, Lot 14139 | 5000 uL | LCM2PFOA 00005 | 500 uL | 13C2-PFOA | 5 ug/mL |
| ..LCM2PFOA 00005 | 06/19/18 | | Wellington Laboratories, Lot M2PFOA0613 | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL |
| ..LCPFCSP_00103 | 12/27/17 | 06/27/17 | Methanol, Lot 090285 | 10000 uL | LCPFBA 00006 | 200 uL | Perfluorobutanoic acid (PFBA) | 1 ug/mL |
| | | | | | LCPFBS_00006 | 200 uL | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL |
| | | | | | LCPFDA 00006 | 200 uL | Perfluorodecanoic acid (PFDA) | 1 ug/mL |
| | | | | | LCPFDoA_00006 | 200 uL | Perfluorododecanoic acid (PFDoA) | 1 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|--------------------|----------|-----------|---|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCPFDS_00005 | 200 uL | Perfluorodecanesulfonic acid (PFDS) | 0.964 ug/mL |
| | | | | | LCPFHpA_00006 | 200 uL | Perfluoroheptanoic acid (PFHpA) | 1 ug/mL |
| | | | | | LCPFHpS_00010 | 200 uL | Perfluoroheptanesulfonic Acid (PFHpS) | 0.952 ug/mL |
| | | | | | LCPFHxA_00005 | 200 uL | Perfluorohexanoic acid (PFHxA) | 1 ug/mL |
| | | | | | LCPFHxDA_00007 | 200 uL | Perfluorohexadecanoic acid | 1 ug/mL |
| | | | | | LCPFHxS-br_00003 | 200 uL | Perfluorohexanesulfonic acid (PFHxS) | 0.91 ug/mL |
| | | | | | LCPFNA_00007 | 200 uL | Perfluorononanoic acid (PFNA) | 1 ug/mL |
| | | | | | LCPFOA_00007 | 200 uL | Perfluorooctanoic acid (PFOA) | 1 ug/mL |
| | | | | | LCPFODA_00007 | 200 uL | Perfluorooctadecanoic acid | 1 ug/mL |
| | | | | | LCPFOS-br_00003 | 200 uL | Perfluorooctanesulfonic acid (PFOS) | 0.928 ug/mL |
| | | | | | LCPFOSA_00010 | 200 uL | Perfluorooctane Sulfonamide (FOSA) | 1 ug/mL |
| | | | | | LCPFPeA_00006 | 200 uL | Perfluoropentanoic acid (PFPeA) | 1 ug/mL |
| | | | | | LCPFTeDA_00005 | 200 uL | Perfluorotetradecanoic acid (PFTeA) | 1 ug/mL |
| | | | | | LCPFTrDA_00005 | 200 uL | Perfluorotridecanoic Acid (PFTriA) | 1 ug/mL |
| | | | | | LCPFUdA_00006 | 200 uL | Perfluoroundecanoic acid (PFUnA) | 1 ug/mL |
| ..LCPFBA_00006 | 05/27/21 | | Wellington Laboratories, Lot PFBA0516 | | (Purchased Reagent) | | Perfluorobutanoic acid (PFBA) | 50 ug/mL |
| ..LCPFBS_00006 | 03/15/21 | | Wellington Laboratories, Lot LPFBS0316 | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ..LCPFDA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFDA0516 | | (Purchased Reagent) | | Perfluorodecanoic acid (PFDA) | 50 ug/mL |
| ..LCPFDoA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFDoA0516 | | (Purchased Reagent) | | Perfluorododecanoic acid (PFDoA) | 50 ug/mL |
| ..LCPFDS_00005 | 07/02/20 | | Wellington Laboratories, Lot LPFDS0615 | | (Purchased Reagent) | | Perfluorodecanesulfonic acid (PFDS) | 48.2 ug/mL |
| ..LCPFHpA_00006 | 01/22/21 | | Wellington Laboratories, Lot PFHpA0116 | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| ..LCPFHpS_00010 | 11/06/20 | | Wellington Laboratories, Lot LPFHpS1115 | | (Purchased Reagent) | | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ug/mL |
| ..LCPFHxA_00005 | 12/22/20 | | Wellington Laboratories, Lot PFHxA1215 | | (Purchased Reagent) | | Perfluorohexanoic acid (PFHxA) | 50 ug/mL |
| ..LCPFHxDA_00007 | 05/25/21 | | Wellington Laboratories, Lot PFHxDA0516 | | (Purchased Reagent) | | Perfluorohexadecanoic acid | 50 ug/mL |
| ..LCPFHxS-br_00003 | 07/03/20 | | Wellington Laboratories, Lot brPFHxSK0615 | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ..LCPFNA_00007 | 10/23/20 | | Wellington Laboratories, Lot PFNA1015 | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ..LCPFOA_00007 | 08/02/21 | | Wellington Laboratories, Lot PFOA0716 | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| ..LCPFODA_00007 | 04/29/21 | | Wellington Laboratories, Lot PFODA0416 | | (Purchased Reagent) | | Perfluorooctadecanoic acid | 50 ug/mL |
| ..LCPFOS-br_00003 | 10/14/20 | | Wellington Laboratories, Lot brPFOSK1015 | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| ..LCPFOSA_00010 | 09/30/21 | | Wellington Laboratories, Lot FOSA0916I | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| ..LCPFPeA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFPeA0516 | | (Purchased Reagent) | | Perfluoropentanoic acid (PFPeA) | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|--|-----------|---|---|----------------------|---------------------|--------------|---|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCPFTeDA_00005 | 12/09/20 | | Wellington Laboratories, Lot PFTeDA1215 | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| ..LCPFTrDA_00005 | 02/12/21 | | Wellington Laboratories, Lot PFTrDA0216 | | (Purchased Reagent) | | Perfluorotridecanoic Acid (PFTriA) | 50 ug/mL |
| ..LCPFuDA_00006 | 08/19/20 | | Wellington Laboratories, Lot PFUDA0815 | | (Purchased Reagent) | | Perfluoroundecanoic acid (PFUnA) | 50 ug/mL |
| LCPFC_FULL-L7_00004 | 12/27/17 | 07/07/17 | MeOH/H2O, Lot 090285 | 5000 uL | LCMPFC_ALL_SU_00001 | 250 uL | d-N-EtFOSA-M | 50 ng/mL |
| | | | | | | | d-N-MeFOSA-M | 50 ng/mL |
| | | | | | | | d3-NMeFOSAA | 50 ng/mL |
| | | | | | | | d5-NetFOSAA | 50 ng/mL |
| | | | | | | | M2-6:2FTS | 47.5 ng/mL |
| | | | | | | | M2-8:2FTS | 47.9 ng/mL |
| | | | | | | | 13C2-PFHxDA | 50 ng/mL |
| | | | | | | | 13C2-PFTeDA | 50 ng/mL |
| | | | | | | | 13C4-PFHpA | 50 ng/mL |
| | | | | | | | 13C5 PFPeA | 50 ng/mL |
| | | | | | | | 13C8 FOSA | 50 ng/mL |
| | | | | | | | 13C4 PFBA | 50 ng/mL |
| | | | | | | | 13C2 PFDA | 50 ng/mL |
| | | | | | | | 13C2 PFDoA | 50 ng/mL |
| | | | | | | | 13C2 PFHxA | 50 ng/mL |
| | | | | | 18O2 PFHxS | 47.3 ng/mL | | |
| | | | | | 13C5 PFNA | 50 ng/mL | | |
| | | | | | 13C4 PFOA | 50 ng/mL | | |
| | | | | | 13C4 PFOS | 47.8 ng/mL | | |
| | | | | | 13C2 PFUnA | 50 ng/mL | | |
| | | | | | LCPFC2SP_00037 | 1000 uL | Sodium | 186.8 ng/mL |
| | | | | | | | 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | |
| | | | | | | | Sodium | 189.6 ng/mL |
| | | | | | | | 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | |
| | | | | | | | Sodium | 191.6 ng/mL |
| | | | | | | | 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | |
| | | | | | | | N-ethylperfluoro-1-octanesulfo namide | 200 ng/mL |
| N-ethyl perfluorooctane sulfonamidoacetic acid | 200 ng/mL | | | | | | | |
| LCPFCIS_00003 | 50 uL | MeFOSA | 200 ng/mL | | | | | |
| | | N-methyl perfluorooctane sulfonamidoacetic acid | 200 ng/mL | | | | | |
| LCPFCSP_00103 | 1000 uL | 13C2-PFOA | 50 ng/mL | | | | | |
| | | Perfluorobutanoic acid (PFBA) | 200 ng/mL | | | | | |
| | | Perfluorobutanesulfonic acid (PFBS) | 176.8 ng/mL | | | | | |
| | | Perfluorodecanoic acid (PFDA) | 200 ng/mL | | | | | |
| | | Perfluorododecanoic acid (PFDoA) | 200 ng/mL | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|--------------------------------|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 192.8 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 200 ng/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 190.4 ng/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 200 ng/mL |
| | | | | | | | Perfluorohexadecanoic acid | 200 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 182 ng/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 200 ng/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 200 ng/mL |
| | | | | | | | Perfluorooctadecanoic acid | 200 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 185.6 ng/mL |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 200 ng/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 200 ng/mL |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 200 ng/mL |
| | | | | | | | Perfluorotridecanoic Acid (PFTriA) | 200 ng/mL |
| | | | | | | | Perfluoroundecanoic acid (PFUnA) | 200 ng/mL |
| .LCMPFC_ALL_SU_00001 | 12/29/17 | 06/29/17 | Methanol, Lot Baker 141039 | 10000 uL | LCd-NEtFOSA-M_00005 | 200 uL | d-N-EtFOSA-M | 1 ug/mL |
| | | | | | LCd-NMeFOSA-M_00004 | 200 uL | d-N-MeFOSA-M | 1 ug/mL |
| | | | | | LCd3-NMeFOSAA_00004 | 200 uL | d3-NMeFOSAA | 1 ug/mL |
| | | | | | LCd5-NEtFOSAA_00004 | 200 uL | d5-NEtFOSAA | 1 ug/mL |
| | | | | | LCM2-6:FtS_00004 | 200 uL | M2-6:2FtS | 0.95 ug/mL |
| | | | | | LCM2-8:2FtS_00004 | 200 uL | M2-8:2FtS | 0.958 ug/mL |
| | | | | | LCM2PFHxDA_00010 | 200 uL | 13C2-PFHxDA | 1 ug/mL |
| | | | | | LCM2PFTeDA_00009 | 200 uL | 13C2-PFTeDA | 1 ug/mL |
| | | | | | LCM4PFHPA_00009 | 200 uL | 13C4-PFHPA | 1 ug/mL |
| | | | | | LCM5PFPEA_00010 | 200 uL | 13C5 PFPeA | 1 ug/mL |
| | | | | | LCM8FOSA_00013 | 200 uL | 13C8 FOSA | 1 ug/mL |
| | | | | | LCMPFBA_00010 | 200 uL | 13C4 PFBA | 1 ug/mL |
| | | | | | LCMPFDA_00015 | 200 uL | 13C2 PFDA | 1 ug/mL |
| | | | | | LCMPFDoA_00010 | 200 uL | 13C2 PFDoA | 1 ug/mL |
| | | | | | LCMPFHxA_00016 | 200 uL | 13C2 PFHxA | 1 ug/mL |
| | | | | | LCMPFHxS_00010 | 200 uL | 18O2 PFHxS | 0.946 ug/mL |
| | | | | | LCMPFNA_00010 | 200 uL | 13C5 PFNA | 1 ug/mL |
| | | | | | LCMPFOA_00014 | 200 uL | 13C4 PFOA | 1 ug/mL |
| | | | | | LCMPFOS_00022 | 200 uL | 13C4 PFOS | 0.956 ug/mL |
| | | | | | LCMPFUDa_00011 | 200 uL | 13C2 PFUnA | 1 ug/mL |
| ..LCd-NEtFOSA-M_00005 | 06/10/21 | | WELLINGTON, Lot dNetFOSA0616M | | (Purchased Reagent) | | d-N-EtFOSA-M | 50 ug/mL |
| ..LCd-NMeFOSA-M_00004 | 06/10/21 | | WELLINGTON, Lot dNMeFOSA0616M | | (Purchased Reagent) | | d-N-MeFOSA-M | 50 ug/mL |
| ..LCd3-NMeFOSAA_00004 | 11/22/21 | | WELLINGTON, Lot d3NMeFOSAA1116 | | (Purchased Reagent) | | d3-NMeFOSAA | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|---|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCd5-NEtFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d5NEtFOSAA1116 | | (Purchased Reagent) | | d5-NEtFOSAA | 50 ug/mL |
| ..LCM2-6:FtS 00004 | 02/17/22 | | WELLINGTON, Lot M262FtS0217 | | (Purchased Reagent) | | M2-6:2FtS | 47.5 ug/mL |
| ..LCM2-8:2FtS 00004 | 08/22/21 | | WELLINGTON, Lot M282FtS0816 | | (Purchased Reagent) | | M2-8:2FtS | 47.9 ug/mL |
| ..LCM2PFHxDA 00010 | 01/07/21 | | Wellington Laboratories, Lot M2PFHxDA1112 | | (Purchased Reagent) | | 13C2-PFHxDA | 50 ug/mL |
| ..LCM2PFtEDA 00009 | 12/07/20 | | Wellington Laboratories, Lot M2PFtEDA0217 | | (Purchased Reagent) | | 13C2-PFtEDA | 50 ug/mL |
| ..LCM4PFHPA 00009 | 05/27/21 | | Wellington Laboratories, Lot M4PFHPA0516 | | (Purchased Reagent) | | 13C4-PFHpA | 50 ug/mL |
| ..LCM5PFPEA 00010 | 11/22/21 | | Wellington Laboratories, Lot M5PFPeA1116 | | (Purchased Reagent) | | 13C5 PFPeA | 50 ug/mL |
| ..LCM8FOSA 00013 | 12/22/20 | | Wellington Laboratories, Lot M8FOSA1215I | | (Purchased Reagent) | | 13C8 FOSA | 50 ug/mL |
| ..LCMPFBA 00010 | 05/24/21 | | Wellington Laboratories, Lot MPFBA0516 | | (Purchased Reagent) | | 13C4 PFBA | 50 ug/mL |
| ..LCMPFDA 00015 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| ..LCMPFDoA 00010 | 04/08/21 | | Wellington Laboratories, Lot MPFDoA0416 | | (Purchased Reagent) | | 13C2 PFDoA | 50 ug/mL |
| ..LCMPFHxA 00016 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| ..LCMPFHxS 00010 | 02/17/22 | | Wellington Laboratories, Lot MPFHxS0217 | | (Purchased Reagent) | | 18O2 PFHxS | 47.3 ug/mL |
| ..LCMPFNA 00010 | 09/30/21 | | Wellington Laboratories, Lot MPFNA0916 | | (Purchased Reagent) | | 13C5 PFNA | 50 ug/mL |
| ..LCMPFOA 00014 | 04/12/22 | | Wellington Laboratories, Lot MPFOA0417 | | (Purchased Reagent) | | 13C4 PFOA | 50 ug/mL |
| ..LCMPFOS 00022 | 12/12/21 | | Wellington Laboratories, Lot MPFOS1216 | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| ..LCMPFudA 00011 | 11/22/21 | | Wellington Laboratories, Lot MPFudA1116 | | (Purchased Reagent) | | 13C2 PFUnA | 50 ug/mL |
| ..LCPFC2SP_00037 | 01/07/18 | 07/07/17 | Methanol, Lot 104453 | 10 mL | LC4:2FtS_00002 | 200 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.934 ug/mL |
| | | | | | LC6:2FtS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL |
| | | | | | LC8:2FtS_00003 | 200 uL | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.958 ug/mL |
| | | | | | LCN-EtFOSA-M_00004 | 200 uL | N-ethylperfluoro-1-octanesulfo namide | 1 ug/mL |
| | | | | | LCN-EtFOSAA_00002 | 200 uL | N-ethyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| | | | | | LCN-MeFOSA-M_00003 | 200 uL | MeFOSA | 1 ug/mL |
| | | | | | LCN-MeFOSAA_00003 | 200 uL | N-methyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| ..LC4:2FtS_00002 | 12/12/21 | | WELLINGTON, Lot 42FtS1216 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 46.7 ug/mL |
| ..LC6:2FtS_00003 | 06/25/21 | | WELLINGTON, Lot 62FtS0616 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL |
| ..LC8:2FtS_00003 | 08/22/21 | | WELLINGTON, Lot 82FtS0816 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 47.9 ug/mL |
| ..LCN-EtFOSA-M_00004 | 05/24/21 | | WELLINGTON, Lot NEtFOSA0516M | | (Purchased Reagent) | | N-ethylperfluoro-1-octanesulfo namide | 50 ug/mL |
| ..LCN-EtFOSAA_00002 | 01/20/21 | | WELLINGTON, Lot NEtFOSAA0116 | | (Purchased Reagent) | | N-ethyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ..LCN-MeFOSA-M_00003 | 05/24/21 | | WELLINGTON, Lot NMeFOSA0516M | | (Purchased Reagent) | | MeFOSA | 50 ug/mL |
| ..LCN-MeFOSAA_00003 | 01/20/21 | | WELLINGTON, Lot NMeFOSAA0116 | | (Purchased Reagent) | | N-methyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ..LCPFCIS_00003 | 12/30/17 | 06/30/17 | Methanol, Lot 14139 | 5000 uL | LCM2PFOA_00005 | 500 uL | 13C2-PFOA | 5 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|--------------------|----------|-----------|---|----------------------|------------------|---------------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCM2PFOA_00005 | 06/19/18 | | Wellington Laboratories, Lot M2PFOA0613 | | | (Purchased Reagent) | 13C2-PFOA | 50 ug/mL |
| ..LCPFCSP_00103 | 12/27/17 | 06/27/17 | Methanol, Lot 090285 | 10000 uL | LCPFBA_00006 | 200 uL | Perfluorobutanoic acid (PFBA) | 1 ug/mL |
| | | | | | LCPFBS_00006 | 200 uL | Perfluorobutanesulfonic acid (PFBS) | 0.884 ug/mL |
| | | | | | LCPFDA_00006 | 200 uL | Perfluorodecanoic acid (PFDA) | 1 ug/mL |
| | | | | | LCPFDoA_00006 | 200 uL | Perfluorododecanoic acid (PFDoA) | 1 ug/mL |
| | | | | | LCPFDS_00005 | 200 uL | Perfluorodecanesulfonic acid (PFDS) | 0.964 ug/mL |
| | | | | | LCPFHpA_00006 | 200 uL | Perfluoroheptanoic acid (PFHpA) | 1 ug/mL |
| | | | | | LCPFHpS_00010 | 200 uL | Perfluoroheptanesulfonic Acid (PFHpS) | 0.952 ug/mL |
| | | | | | LCPFHxA_00005 | 200 uL | Perfluorohexanoic acid (PFHxA) | 1 ug/mL |
| | | | | | LCPFHxDA_00007 | 200 uL | Perfluorohexadecanoic acid | 1 ug/mL |
| | | | | | LCPFHxS-br_00003 | 200 uL | Perfluorohexanesulfonic acid (PFHxS) | 0.91 ug/mL |
| | | | | | LCPFNA_00007 | 200 uL | Perfluorononanoic acid (PFNA) | 1 ug/mL |
| | | | | | LCPFOA_00007 | 200 uL | Perfluorooctanoic acid (PFOA) | 1 ug/mL |
| | | | | | LCPFOA_00007 | 200 uL | Perfluorooctadecanoic acid | 1 ug/mL |
| | | | | | LCPFOS-br_00003 | 200 uL | Perfluorooctanesulfonic acid (PFOS) | 0.928 ug/mL |
| | | | | | LCPFOSA_00010 | 200 uL | Perfluorooctane Sulfonamide (FOSA) | 1 ug/mL |
| | | | | | LCPFPeA_00006 | 200 uL | Perfluoropentanoic acid (PFPeA) | 1 ug/mL |
| | | | | | LCPFTeDA_00005 | 200 uL | Perfluorotetradecanoic acid (PFTeA) | 1 ug/mL |
| | | | | | LCPFTrDA_00005 | 200 uL | Perfluorotridecanoic Acid (PFTriA) | 1 ug/mL |
| | | | | | LCPFUdA_00006 | 200 uL | Perfluoroundecanoic acid (PFUnA) | 1 ug/mL |
| ..LCPFBA_00006 | 05/27/21 | | Wellington Laboratories, Lot PFBA0516 | | | (Purchased Reagent) | Perfluorobutanoic acid (PFBA) | 50 ug/mL |
| ..LCPFBS_00006 | 03/15/21 | | Wellington Laboratories, Lot LPFBS0316 | | | (Purchased Reagent) | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ..LCPFDA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFDA0516 | | | (Purchased Reagent) | Perfluorodecanoic acid (PFDA) | 50 ug/mL |
| ..LCPFDoA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFDoA0516 | | | (Purchased Reagent) | Perfluorododecanoic acid (PFDoA) | 50 ug/mL |
| ..LCPFDS_00005 | 07/02/20 | | Wellington Laboratories, Lot LPFDS0615 | | | (Purchased Reagent) | Perfluorodecanesulfonic acid (PFDS) | 48.2 ug/mL |
| ..LCPFHpA_00006 | 01/22/21 | | Wellington Laboratories, Lot PFHpA0116 | | | (Purchased Reagent) | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| ..LCPFHpS_00010 | 11/06/20 | | Wellington Laboratories, Lot LPFHpS1115 | | | (Purchased Reagent) | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ug/mL |
| ..LCPFHxA_00005 | 12/22/20 | | Wellington Laboratories, Lot PFHxA1215 | | | (Purchased Reagent) | Perfluorohexanoic acid (PFHxA) | 50 ug/mL |
| ..LCPFHxDA_00007 | 05/25/21 | | Wellington Laboratories, Lot PFHxDA0516 | | | (Purchased Reagent) | Perfluorohexadecanoic acid | 50 ug/mL |
| ..LCPFHxS-br_00003 | 07/03/20 | | Wellington Laboratories, Lot brPFHxSK0615 | | | (Purchased Reagent) | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ..LCPFNA_00007 | 10/23/20 | | Wellington Laboratories, Lot PFNA1015 | | | (Purchased Reagent) | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ..LCPFOA_00007 | 08/02/21 | | Wellington Laboratories, Lot PFOA0716 | | | (Purchased Reagent) | Perfluorooctanoic acid (PFOA) | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|--|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCPFODA_00007 | 04/29/21 | | Wellington Laboratories, Lot PFODA0416 | | (Purchased Reagent) | | Perfluorooctadecanoic acid | 50 ug/mL |
| ..LCPFOS-br_00003 | 10/14/20 | | Wellington Laboratories, Lot brPFOSK1015 | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| ..LCPFOSA_00010 | 09/30/21 | | Wellington Laboratories, Lot FOSA0916I | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| ..LCPFPeA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFPeA0516 | | (Purchased Reagent) | | Perfluoropentanoic acid (PFPeA) | 50 ug/mL |
| ..LCPFTeDA_00005 | 12/09/20 | | Wellington Laboratories, Lot PFTeDA1215 | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| ..LCPFTrDA_00005 | 02/12/21 | | Wellington Laboratories, Lot PFTrDA0216 | | (Purchased Reagent) | | Perfluorotridecanoic Acid (PFTriA) | 50 ug/mL |
| ..LCPFuDA_00006 | 08/19/20 | | Wellington Laboratories, Lot PFuDA0815 | | (Purchased Reagent) | | Perfluoroundecanoic acid (PFUnA) | 50 ug/mL |
| LCPFC2SP_00032 | 10/14/17 | 04/21/17 | Methanol, Lot 104453 | 200 mL | LCPFC2SP_00030 | 4 mL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.01868 ug/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.01896 ug/mL |
| | | | | | | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.01916 ug/mL |
| | | | | | | | N-ethylperfluoro-1-octanesulfonamide | 0.02 ug/mL |
| | | | | | | | N-ethyl perfluorooctane sulfonamidoacetic acid | 0.02 ug/mL |
| | | | | | | | MeFOSA | 0.02 ug/mL |
| | | | | | | | N-methyl perfluorooctane sulfonamidoacetic acid | 0.02 ug/mL |
| .LCPFC2SP_00030 | 10/14/17 | 04/14/17 | Methanol, Lot 104453 | 10000 uL | LC4:2FTS_00002 | 200 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.934 ug/mL |
| | | | | | LC6:2FTS_00002 | 200 uL | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.948 ug/mL |
| | | | | | LC8:2FTS_00002 | 200 uL | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.958 ug/mL |
| | | | | | LCN-EtFOSA-M_00003 | 200 uL | N-ethylperfluoro-1-octanesulfonamide | 1 ug/mL |
| | | | | | LCN-EtFOSAA_00002 | 200 uL | N-ethyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| | | | | | LCN-MeFOSA-M_00002 | 200 uL | MeFOSA | 1 ug/mL |
| | | | | | LCN-MeFOSAA_00003 | 200 uL | N-methyl perfluorooctane sulfonamidoacetic acid | 1 ug/mL |
| ..LC4:2FTS_00002 | 12/12/21 | | WELLINGTON, Lot 42FTS1216 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 46.7 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|--------------------------------------|---------------|-----------|------------------------------|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LC6:2FTS_00002 | 06/25/21 | | WELLINGTON, Lot 62FTS0616 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL |
| ..LC8:2FTS_00002 | 10/23/20 | | WELLINGTON, Lot 82FTS1015 | | (Purchased Reagent) | | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 47.9 ug/mL |
| ..LCN-EtFOSA-M_00003 | 05/24/21 | | WELLINGTON, Lot NETFOSA0516M | | (Purchased Reagent) | | N-ethylperfluoro-1-octanesulfo namide | 50 ug/mL |
| ..LCN-EtFOSAA_00002 | 01/20/21 | | WELLINGTON, Lot NETFOSAA0116 | | (Purchased Reagent) | | N-ethyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| ..LCN-MeFOSA-M_00002 | 05/24/21 | | WELLINGTON, Lot NMeFOSA0714M | | (Purchased Reagent) | | MeFOSA | 50 ug/mL |
| ..LCN-MeFOSAA_00003 | 01/20/21 | | WELLINGTON, Lot NMeFOSAA0116 | | (Purchased Reagent) | | N-methyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| LCPFCIC_FULL_00003 | 09/02/17 | 05/30/17 | MeOH/H2O, Lot 09285 | 5050 uL | LCMPFC2SU_00019 | 250 uL | d-N-EtFOSA-M | 49.505 ng/mL |
| | | | | | | | d-N-MeFOSA-M | 49.505 ng/mL |
| | | | | | | | d3-NMeFOSAA | 49.505 ng/mL |
| | | | | | | | d5-NEtFOSAA | 49.505 ng/mL |
| | | | | | | | M2-6:2FTS | 47.0297 ng/mL |
| | | | | | | | M2-8:2FTS | 47.4257 ng/mL |
| | | | | | LCMPFCSU_00069 | 250 uL | 13C2-PFHxDA | 49.505 ng/mL |
| | | | | | | | 13C2-PFTeDA | 49.505 ng/mL |
| | | | | | | | 13C4-PFHpA | 49.505 ng/mL |
| | | | | | | | 13C5 PFPeA | 49.505 ng/mL |
| | | | | | | | 13C8 FOSA | 49.505 ng/mL |
| | | | | | | | 13C4 PFBA | 49.505 ng/mL |
| | | | | | | | 13C2 PFDA | 49.505 ng/mL |
| | | | | | | | 13C2 PFDoA | 49.505 ng/mL |
| | | | | | | | 13C2 PFHxA | 49.505 ng/mL |
| | | | | | | | 18O2 PFHxS | 46.8317 ng/mL |
| | | | | | | | 13C5 PFNA | 49.505 ng/mL |
| | | | | | | | 13C4 PFOA | 49.505 ng/mL |
| | | | | | | | 13C4 PFOS | 47.3267 ng/mL |
| | | | | | | | 13C2 PFUnA | 49.505 ng/mL |
| | | | | | LCPFACMXB_00007 | 125 uL | Perfluorobutanesulfonic acid (PFBS) | 43.8119 ng/mL |
| | | | | | | | Perfluorobutanoic acid (PFBA) | 49.505 ng/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 47.7723 ng/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 49.505 ng/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 49.505 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 49.505 ng/mL |
| Perfluorohexanesulfonic acid (PFHxS) | 46.7822 ng/mL | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | 49.505 ng/mL | | | | | | | |
| Perfluorononanoic acid (PFNA) | 49.505 ng/mL | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 47.2772 ng/mL | | | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | |
|-----------------------|----------|-----------|---|----------------------|---------------------|--------------|---------------------------------------|---------------|------------|
| | | | | | Reagent ID | Volume Added | | | |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 49.505 ng/mL | |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 49.505 ng/mL | |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 49.505 ng/mL | |
| | | | | | | | Perfluorotridecanoic Acid (PFTriA) | 49.505 ng/mL | |
| | | | | | | | Perfluoroundecanoic acid (PFUnA) | 49.505 ng/mL | |
| | | | | | LCPFC3IM_00007 | 250 uL | Perfluoroheptanesulfonic Acid (PFHpS) | 47.1287 ng/mL | |
| | | | | | | | Perfluorooctane Sulfonamide (FOSA) | 49.505 ng/mL | |
| .LCMPFC2SU_00019 | 11/30/17 | 05/30/17 | Methanol, Lot 104453 | 5000 uL | LCd-NETfOSA-M 00005 | 100 uL | d-N-EtFOSA-M | 1 ug/mL | |
| | | | | | LCd-NMeFOSA-M 00004 | 100 uL | d-N-MeFOSA-M | 1 ug/mL | |
| | | | | | LCd3-NMeFOSAA 00004 | 100 uL | d3-NMeFOSAA | 1 ug/mL | |
| | | | | | LCd5-NETfOSAA 00004 | 100 uL | d5-NETfOSAA | 1 ug/mL | |
| | | | | | LCM2-6:FtS 00004 | 100 uL | M2-6:2FtS | 0.95 ug/mL | |
| | | | | | LCM2-8:2FtS 00004 | 100 uL | M2-8:2FtS | 0.958 ug/mL | |
| ..LCG-NETfOSA-M 00005 | 06/10/21 | | WELLINGTON, Lot dNETfOSA0616M | | | | (Purchased Reagent) | d-N-EtFOSA-M | 50 ug/mL |
| ..LCd-NMeFOSA-M 00004 | 06/10/21 | | WELLINGTON, Lot dNMeFOSA0616M | | | | (Purchased Reagent) | d-N-MeFOSA-M | 50 ug/mL |
| ..LCd3-NMeFOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d3NMeFOSAA1116 | | | | (Purchased Reagent) | d3-NMeFOSAA | 50 ug/mL |
| ..LCd5-NETfOSAA 00004 | 11/22/21 | | WELLINGTON, Lot d5NETfOSAA1116 | | | | (Purchased Reagent) | d5-NETfOSAA | 50 ug/mL |
| ..LCM2-6:FtS 00004 | 02/17/22 | | WELLINGTON, Lot M262FtS0217 | | | | (Purchased Reagent) | M2-6:2FtS | 47.5 ug/mL |
| ..LCM2-8:2FtS 00004 | 08/22/21 | | WELLINGTON, Lot M282FtS0816 | | | | (Purchased Reagent) | M2-8:2FtS | 47.9 ug/mL |
| .LCMPFCSU_00069 | 11/24/17 | 05/24/17 | Methanol, Lot Baker 141039 | 10000 uL | LCM2PFHxDA_00009 | 200 uL | 13C2-PFHxDA | 1 ug/mL | |
| | | | | | LCM2PFTEdA 00008 | 200 uL | 13C2-PFTEdA | 1 ug/mL | |
| | | | | | LCM4PFHPA 00008 | 200 uL | 13C4-PFHPa | 1 ug/mL | |
| | | | | | LCM5PFPEA 00009 | 200 uL | 13C5 PFPeA | 1 ug/mL | |
| | | | | | LCM8FOSA 00012 | 200 uL | 13C8 FOSA | 1 ug/mL | |
| | | | | | LCMPFBA 00009 | 200 uL | 13C4 PFBA | 1 ug/mL | |
| | | | | | LCMPFDA 00013 | 200 uL | 13C2 PFDA | 1 ug/mL | |
| | | | | | LCMPFDoA 00009 | 200 uL | 13C2 PFDoA | 1 ug/mL | |
| | | | | | LCMPFHxA 00014 | 200 uL | 13C2 PFHxA | 1 ug/mL | |
| | | | | | LCMPFHxS 00009 | 200 uL | 1802 PFHxS | 0.946 ug/mL | |
| | | | | | LCMPFNA 00009 | 200 uL | 13C5 PFNA | 1 ug/mL | |
| | | | | | LCMPFOA 00013 | 200 uL | 13C4 PFOA | 1 ug/mL | |
| | | | | | LCMPFOS 00020 | 200 uL | 13C4 PFOS | 0.956 ug/mL | |
| | | | | | LCMPFUDa 00010 | 200 uL | 13C2 PFUnA | 1 ug/mL | |
| ..LCM2PFHxDA 00009 | 01/07/21 | | Wellington Laboratories, Lot M2PFHxDA1112 | | | | (Purchased Reagent) | 13C2-PFHxDA | 50 ug/mL |
| ..LCM2PFTEdA 00008 | 12/07/20 | | Wellington Laboratories, Lot M2PFTEdA1115 | | | | (Purchased Reagent) | 13C2-PFTEdA | 50 ug/mL |
| ..LCM4PFHPA 00008 | 05/27/21 | | Wellington Laboratories, Lot M4PFHPa0516 | | | | (Purchased Reagent) | 13C4-PFHPa | 50 ug/mL |
| ..LCM5PFPEA 00009 | 11/22/21 | | Wellington Laboratories, Lot M5PFPeA1116 | | | | (Purchased Reagent) | 13C5 PFPeA | 50 ug/mL |
| ..LCM8FOSA 00012 | 12/22/20 | | Wellington Laboratories, Lot M8FOSA1215I | | | | (Purchased Reagent) | 13C8 FOSA | 50 ug/mL |
| ..LCMPFBA 00009 | 05/24/21 | | Wellington Laboratories, Lot MPFBA0516 | | | | (Purchased Reagent) | 13C4 PFBA | 50 ug/mL |
| ..LCMPFDA 00013 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | | | (Purchased Reagent) | 13C2 PFDA | 50 ug/mL |
| ..LCMPFDoA 00009 | 04/08/21 | | Wellington Laboratories, Lot MPFDoA0416 | | | | (Purchased Reagent) | 13C2 PFDoA | 50 ug/mL |
| ..LCMPFHxA 00014 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | | | (Purchased Reagent) | 13C2 PFHxA | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------|----------|-----------|--|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCMPFHxS_00009 | 10/23/20 | | Wellington Laboratories, Lot MPFHxS1015 | | (Purchased Reagent) | | 1802 PFHxS | 47.3 ug/mL |
| ..LCMPFNA_00009 | 09/30/21 | | Wellington Laboratories, Lot MPFNA0916 | | (Purchased Reagent) | | 13C5 PFNA | 50 ug/mL |
| ..LCMPFOA_00013 | 10/18/21 | | Wellington Laboratories, Lot MPFOA1016 | | (Purchased Reagent) | | 13C4 PFOA | 50 ug/mL |
| ..LCMPFOS_00020 | 12/12/21 | | Wellington Laboratories, Lot MPFOS1216 | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| ..LCMPFudA_00010 | 11/22/21 | | Wellington Laboratories, Lot MPFudA1116 | | (Purchased Reagent) | | 13C2 PFUnA | 50 ug/mL |
| .LCPFACMXB_00007 | 11/06/20 | | Wellington Laboratories, Lot PFACMXB1115 | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 1.77 ug/mL |
| | | | | | | | Perfluorobutanoic acid (PFBA) | 2 ug/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 1.93 ug/mL |
| | | | | | | | Perfluorodecanoic acid (PFDA) | 2 ug/mL |
| | | | | | | | Perfluorododecanoic acid (PFDoA) | 2 ug/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 2 ug/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 1.89 ug/mL |
| | | | | | | | Perfluorohexanoic acid (PFHxA) | 2 ug/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 2 ug/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 1.91 ug/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 2 ug/mL |
| | | | | | | | Perfluoropentanoic acid (PFPeA) | 2 ug/mL |
| | | | | | | | Perfluorotetradecanoic acid (PFTeA) | 2 ug/mL |
| | | | | | | | Perfluorotridecanoic Acid (PFTriA) | 2 ug/mL |
| | | | | | | | Perfluoroundecanoic acid (PFUnA) | 2 ug/mL |
| .LCPFC3IM_00007 | 09/02/17 | 05/30/17 | Methanol, Lot 090285 | 5 mL | LCPFHps_00010 | 0.1 mL | Perfluoroheptanesulfonic Acid (PFHpS) | 952 ng/mL |
| | | | | | LCPFOSA_00009 | 0.1 mL | Perfluorooctane Sulfonamide (FOSA) | 1000 ng/mL |
| ..LCPFHps_00010 | 11/06/20 | | Wellington Laboratories, Lot LPPHps1115 | | (Purchased Reagent) | | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ug/mL |
| ..LCPFOSA_00009 | 09/02/17 | | Wellington Laboratories, Lot FOSA0815I | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| LCPFCSP_00100 | 12/20/17 | 06/20/17 | Methanol, Lot 090285 | 250 mL | LCPFBA_00006 | 100 uL | Perfluorobutanoic acid (PFBA) | 0.02 ug/mL |
| | | | | | LCPFBS_00006 | 100 uL | Perfluorobutane Sulfonate | 0.01768 ug/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 0.01768 ug/mL |
| | | | | | LCPFDA_00006 | 100 uL | Perfluorodecanoic acid (PFDA) | 0.02 ug/mL |
| | | | | | LCPFDoA_00006 | 100 uL | Perfluorododecanoic acid (PFDoA) | 0.02 ug/mL |
| | | | | | LCPFDS_00007 | 100 uL | Perfluorodecane Sulfonate | 0.01928 ug/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 0.01928 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-------------------|----------|---|---------------|----------------------|---------------------|--------------|---------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCPFHpA_00007 | 100 uL | Perfluoroheptanoic acid (PFHpA) | 0.02 ug/mL |
| | | | | | LCPFHpS_00010 | 100 uL | Perfluoroheptane Sulfonate | 0.01904 ug/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 0.01904 ug/mL |
| | | | | | LCPFHxA_00006 | 100 uL | Perfluorohexanoic acid (PFHxA) | 0.02 ug/mL |
| | | | | | LCPFHxDA_00007 | 100 uL | Perfluorohexadecanoic acid | 0.02 ug/mL |
| | | | | | LCPFHxS-br_00003 | 100 uL | Perfluorohexane Sulfonate | 0.0182 ug/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 0.0182 ug/mL |
| | | | | | LCPFNA_00007 | 100 uL | Perfluorononanoic acid (PFNA) | 0.02 ug/mL |
| | | | | | LCPFOA_00007 | 100 uL | Perfluorooctanoic acid (PFOA) | 0.02 ug/mL |
| | | | | | LCPFODA_00007 | 100 uL | Perfluorooctadecanoic acid | 0.02 ug/mL |
| | | | | | LCPFOS-br_00003 | 100 uL | Perfluorooctanesulfonic acid (PFOS) | 0.01856 ug/mL |
| | | | | | LCPFOSA_00010 | 100 uL | Perfluorooctane Sulfonamide (FOSA) | 0.02 ug/mL |
| | | | | | LCPFPeA_00006 | 100 uL | Perfluoropentanoic acid (PFPeA) | 0.02 ug/mL |
| | | | | | LCPFTeDA_00007 | 100 uL | Perfluorotetradecanoic acid (PFTeA) | 0.02 ug/mL |
| | | | | | LCPFTrDA_00007 | 100 uL | Perfluorotridecanoic Acid (PFTriA) | 0.02 ug/mL |
| | | | | | LCPFUdA_00006 | 100 uL | Perfluoroundecanoic acid (PFUnA) | 0.02 ug/mL |
| .LCPFBA_00006 | 05/27/21 | Wellington Laboratories, Lot PFBA0516 | | | (Purchased Reagent) | | Perfluorobutanoic acid (PFBA) | 50 ug/mL |
| .LCPFBS_00006 | 03/15/21 | Wellington Laboratories, Lot LPFBS0316 | | | (Purchased Reagent) | | Perfluorobutane Sulfonate | 44.2 ug/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| .LCPFDA_00006 | 05/31/21 | Wellington Laboratories, Lot PFDA0516 | | | (Purchased Reagent) | | Perfluorodecanoic acid (PFDA) | 50 ug/mL |
| .LCPFDaA_00006 | 05/31/21 | Wellington Laboratories, Lot PFDoA0516 | | | (Purchased Reagent) | | Perfluorododecanoic acid (PFDoA) | 50 ug/mL |
| .LCPFDS_00007 | 05/24/21 | Wellington Laboratories, Lot LPFDS0516 | | | (Purchased Reagent) | | Perfluorodecane Sulfonate | 48.2 ug/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 48.2 ug/mL |
| .LCPFHpA_00007 | 01/22/21 | Wellington Laboratories, Lot PFHpA0116 | | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| .LCPFHpS_00010 | 11/06/20 | Wellington Laboratories, Lot LPFHpS1115 | | | (Purchased Reagent) | | Perfluoroheptane Sulfonate | 47.6 ug/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ug/mL |
| .LCPFHxA_00006 | 12/22/20 | Wellington Laboratories, Lot PFHxA1215 | | | (Purchased Reagent) | | Perfluorohexanoic acid (PFHxA) | 50 ug/mL |
| .LCPFHxDA_00007 | 05/25/21 | Wellington Laboratories, Lot PFHxDA0516 | | | (Purchased Reagent) | | Perfluorohexadecanoic acid | 50 ug/mL |
| .LCPFHxS-br_00003 | 07/03/20 | Wellington Laboratories, Lot brPFHxSK0615 | | | (Purchased Reagent) | | Perfluorohexane Sulfonate | 45.5 ug/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| .LCPFNA_00007 | 10/23/20 | Wellington Laboratories, Lot PFNA1015 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| .LCPFOA_00007 | 08/02/21 | Wellington Laboratories, Lot PFOA0716 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| .LCPFODA_00007 | 04/29/21 | Wellington Laboratories, Lot PFODA0416 | | | (Purchased Reagent) | | Perfluorooctadecanoic acid | 50 ug/mL |
| .LCPFOS-br_00003 | 10/14/20 | Wellington Laboratories, Lot brPFOSK1015 | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|--------------------------------------|--------------|-------------------------------|---|----------------------|---------------------|--------------|--|---------------|
| | | | | | Reagent ID | Volume Added | | |
| .LCPFOSA_00010 | 09/30/21 | | Wellington Laboratories, Lot FOSA0916I | | (Purchased Reagent) | | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| .LCPFPeA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFPeA0516 | | (Purchased Reagent) | | Perfluoropentanoic acid (PFPeA) | 50 ug/mL |
| .LCPFTeDA_00007 | 09/30/21 | | Wellington Laboratories, Lot PFTeDA0916 | | (Purchased Reagent) | | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| .LCPFTrDA_00007 | 02/12/21 | | Wellington Laboratories, Lot PFTrDA0216 | | (Purchased Reagent) | | Perfluorotridecanoic Acid (PFTriA) | 50 ug/mL |
| .LCPFUDA_00006 | 08/19/20 | | Wellington Laboratories, Lot PFUDA0815 | | (Purchased Reagent) | | Perfluoroundecanoic acid (PFUnA) | 50 ug/mL |
| LCPFCSP_00110 | 01/21/18 | 07/21/17 | Methanol, Lot 090285 | 250 mL | LC4:2FTS_00003 | 100 uL | Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2) | 0.01868 ug/mL |
| | | | | | LC6:2FTS_00003 | 100 uL | Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2) | 0.01896 ug/mL |
| | | | | | LC8:2FTS_00003 | 100 uL | Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2) | 0.01916 ug/mL |
| | | | | | LCN-EtFOSA-M_00004 | 100 uL | N-ethylperfluoro-1-octanesulfonamide | 0.02 ug/mL |
| | | | | | LCN-EtFOSAA_00003 | 100 uL | N-ethyl perfluorooctane sulfonamidoacetic acid | 0.02 ug/mL |
| | | | | | LCN-MeFOSA-M_00003 | 100 uL | MeFOSA | 0.02 ug/mL |
| | | | | | LCN-MeFOSAA_00004 | 100 uL | N-methyl perfluorooctane sulfonamidoacetic acid | 0.02 ug/mL |
| | | | | | LCPFBA_00006 | 100 uL | Perfluorobutanoic acid (PFBA) | 0.02 ug/mL |
| | | | | | LCPFBS_00006 | 100 uL | Perfluorobutane Sulfonate | 0.01768 ug/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 0.01768 ug/mL |
| | | | | | LCPFDA_00007 | 100 uL | Perfluorodecanoic acid (PFDA) | 0.02 ug/mL |
| | | | | | LCPFDoA_00007 | 100 uL | Perfluorododecanoic acid (PFDoA) | 0.02 ug/mL |
| | | | | | LCPFDS_00007 | 100 uL | Perfluorodecane Sulfonate | 0.01928 ug/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 0.01928 ug/mL |
| | | | | | LCPFHpA_00007 | 100 uL | Perfluoroheptanoic acid (PFHpA) | 0.02 ug/mL |
| | | | | | LCPFHpS_00010 | 100 uL | Perfluoroheptane Sulfonate | 0.01904 ug/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 0.01904 ug/mL |
| | | | | | LCPFHxA_00006 | 100 uL | Perfluorohexanoic acid (PFHxA) | 0.02 ug/mL |
| | | | | | LCPFHxDA_00007 | 100 uL | Perfluorohexadecanoic acid | 0.02 ug/mL |
| | | | | | LCPFHxS-br_00003 | 100 uL | Perfluorohexane Sulfonate | 0.0182 ug/mL |
| Perfluorohexanesulfonic acid (PFHxS) | 0.0182 ug/mL | | | | | | | |
| LCPFNA_00007 | 100 uL | Perfluorononanoic acid (PFNA) | 0.02 ug/mL | | | | | |
| LCPFOA_00007 | 100 uL | Perfluorooctanoic acid (PFOA) | 0.02 ug/mL | | | | | |
| LCPFODA_00007 | 100 uL | Perfluorooctadecanoic acid | 0.02 ug/mL | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---------------------|----------|-----------|---|----------------------|---------------------|--------------|---|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | LCPFOS-br_00003 | 100 uL | Perfluorooctanesulfonic acid (PFOS) | 0.01856 ug/mL |
| | | | | | LCPFOSA_00010 | 100 uL | Perfluorooctane Sulfonamide (FOSA) | 0.02 ug/mL |
| | | | | | LCPFPeA_00006 | 100 uL | Perfluoropentanoic acid (PFPeA) | 0.02 ug/mL |
| | | | | | LCPFTeDA_00007 | 100 uL | Perfluorotetradecanoic acid (PFTeA) | 0.02 ug/mL |
| | | | | | LCPFTrDA_00007 | 100 uL | Perfluorotridecanoic Acid (PFTriA) | 0.02 ug/mL |
| | | | | | LCPFUdA_00006 | 100 uL | Perfluoroundecanoic acid (PFUnA) | 0.02 ug/mL |
| .LC4:2FTS_00003 | 12/12/21 | | WELLINGTON, Lot 42FTS1216 | | (Purchased Reagent) | | Sodium 1H, 1H, 2H, 2H-perfluorohexane sulfonate (4:2) | 46.7 ug/mL |
| .LC6:2FTS_00003 | 06/25/21 | | WELLINGTON, Lot 62FTS0616 | | (Purchased Reagent) | | Sodium 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2) | 47.4 ug/mL |
| .LC8:2FTS_00003 | 08/22/21 | | WELLINGTON, Lot 82FTS0816 | | (Purchased Reagent) | | Sodium 1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2) | 47.9 ug/mL |
| .LCN-EtFOSA-M_00004 | 05/24/21 | | WELLINGTON, Lot NETFOSA0516M | | (Purchased Reagent) | | N-ethylperfluoro-1-octanesulfonamide | 50 ug/mL |
| .LCN-EtFOSAA_00003 | 09/30/21 | | WELLINGTON, Lot NETFOSAA0916 | | (Purchased Reagent) | | N-ethyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| .LCN-MeFOSA-M_00003 | 05/24/21 | | WELLINGTON, Lot NMeFOSA0516M | | (Purchased Reagent) | | MeFOSA | 50 ug/mL |
| .LCN-MeFOSAA_00004 | 10/12/21 | | WELLINGTON, Lot NMeFOSAA0916 | | (Purchased Reagent) | | N-methyl perfluorooctane sulfonamidoacetic acid | 50 ug/mL |
| .LCPFBA_00006 | 05/27/21 | | Wellington Laboratories, Lot PFBA0516 | | (Purchased Reagent) | | Perfluorobutanoic acid (PFBA) | 50 ug/mL |
| .LCPFBS_00006 | 03/15/21 | | Wellington Laboratories, Lot LPPFBS0316 | | (Purchased Reagent) | | Perfluorobutane Sulfonate | 44.2 ug/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| .LCPFDA_00007 | 05/31/21 | | Wellington Laboratories, Lot PFDA0516 | | (Purchased Reagent) | | Perfluorodecanoic acid (PFDA) | 50 ug/mL |
| .LCPFDoA_00007 | 05/31/21 | | Wellington Laboratories, Lot PFDoA0516 | | (Purchased Reagent) | | Perfluorododecanoic acid (PFDoA) | 50 ug/mL |
| .LCPFDS_00007 | 05/24/21 | | Wellington Laboratories, Lot LPPFDS0516 | | (Purchased Reagent) | | Perfluorodecane Sulfonate | 48.2 ug/mL |
| | | | | | | | Perfluorodecanesulfonic acid (PFDS) | 48.2 ug/mL |
| .LCPFHpA_00007 | 01/22/21 | | Wellington Laboratories, Lot PFHpA0116 | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| .LCPFHpS_00010 | 11/06/20 | | Wellington Laboratories, Lot LPPFHpS1115 | | (Purchased Reagent) | | Perfluoroheptane Sulfonate | 47.6 ug/mL |
| | | | | | | | Perfluoroheptanesulfonic Acid (PFHpS) | 47.6 ug/mL |
| .LCPFHxA_00006 | 12/22/20 | | Wellington Laboratories, Lot PFHxA1215 | | (Purchased Reagent) | | Perfluorohexanoic acid (PFHxA) | 50 ug/mL |
| .LCPFHxDA_00007 | 05/25/21 | | Wellington Laboratories, Lot PFHxDA0516 | | (Purchased Reagent) | | Perfluorohexadecanoic acid | 50 ug/mL |
| .LCPFHxS-br_00003 | 07/03/20 | | Wellington Laboratories, Lot brPFHxSK0615 | | (Purchased Reagent) | | Perfluorohexane Sulfonate | 45.5 ug/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| .LCPFNA_00007 | 10/23/20 | | Wellington Laboratories, Lot PFNA1015 | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| .LCPFOA_00007 | 08/02/21 | | Wellington Laboratories, Lot PFOA0716 | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|------------------|----------|-----------|--|----------------------|----------------|---------------------|-------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| .LCPFODA_00007 | 04/29/21 | | Wellington Laboratories, Lot PFODA0416 | | | (Purchased Reagent) | Perfluorooctadecanoic acid | 50 ug/mL |
| .LCPFOS-br_00003 | 10/14/20 | | Wellington Laboratories, Lot brPFOSK1015 | | | (Purchased Reagent) | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| .LCPFOSA_00010 | 09/30/21 | | Wellington Laboratories, Lot FOSA0916I | | | (Purchased Reagent) | Perfluorooctane Sulfonamide (FOSA) | 50 ug/mL |
| .LCPFPeA_00006 | 05/31/21 | | Wellington Laboratories, Lot PFPeA0516 | | | (Purchased Reagent) | Perfluoropentanoic acid (PFPeA) | 50 ug/mL |
| .LCPFTeDA_00007 | 09/30/21 | | Wellington Laboratories, Lot PFTeDA0916 | | | (Purchased Reagent) | Perfluorotetradecanoic acid (PFTeA) | 50 ug/mL |
| .LCPFTrDA_00007 | 02/12/21 | | Wellington Laboratories, Lot PFTrDA0216 | | | (Purchased Reagent) | Perfluorotridecanoic Acid (PFTriA) | 50 ug/mL |
| .LCPFUdA_00006 | 08/19/20 | | Wellington Laboratories, Lot PFUdA0815 | | | (Purchased Reagent) | Perfluoroundecanoic acid (PFUnA) | 50 ug/mL |

Reagent

LC4 : 2FTS _ 00002

R: SBC 3/31/17



896827
ID: LC4:2FTS_00002
Exp: 12/12/21 Prpd:
4:2FTS

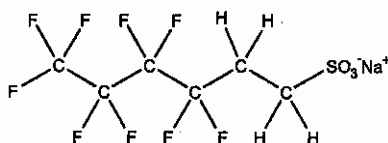


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 4:2FTS **LOT NUMBER:** 42FTS1216
COMPOUND: Sodium 1H,1H,2H,2H-perfluorohexane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₆H₄F₉SO₃Na **MOLECULAR WEIGHT:** 350.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
46.7 ± 2.3 µg/ml (4:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/12/2016
EXPIRY DATE: (mm/dd/yyyy) 12/12/2021
RECOMMENDED STORAGE: Refrigerate ampoule

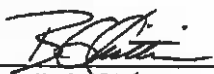
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 12/21/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

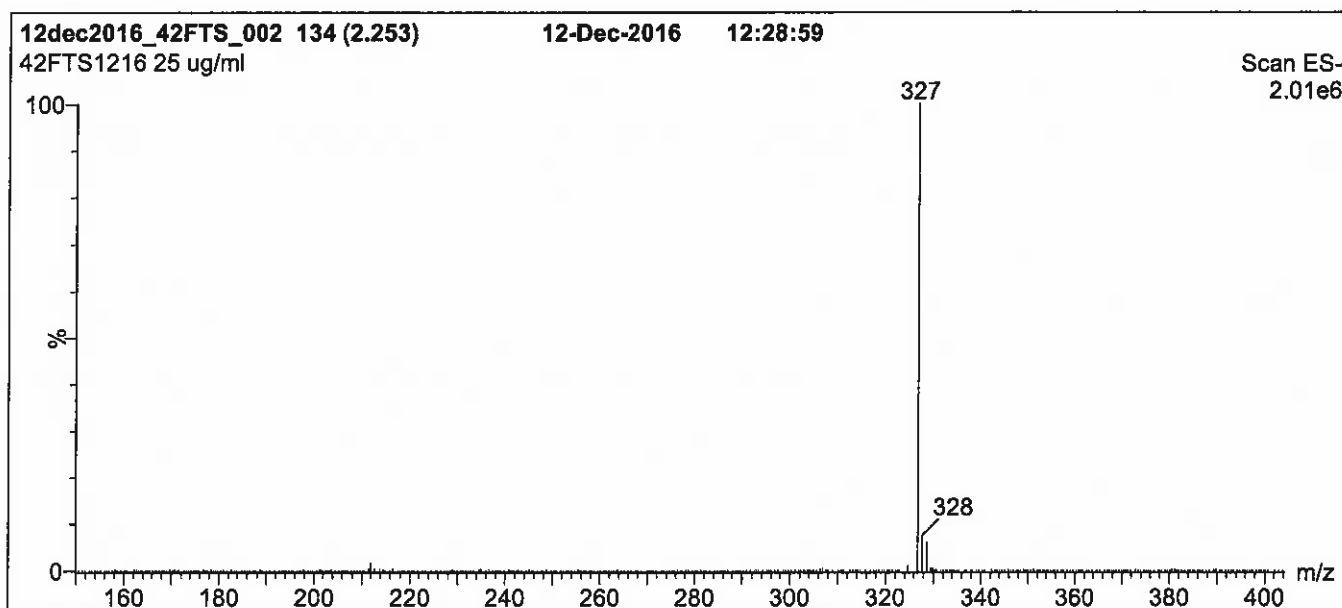
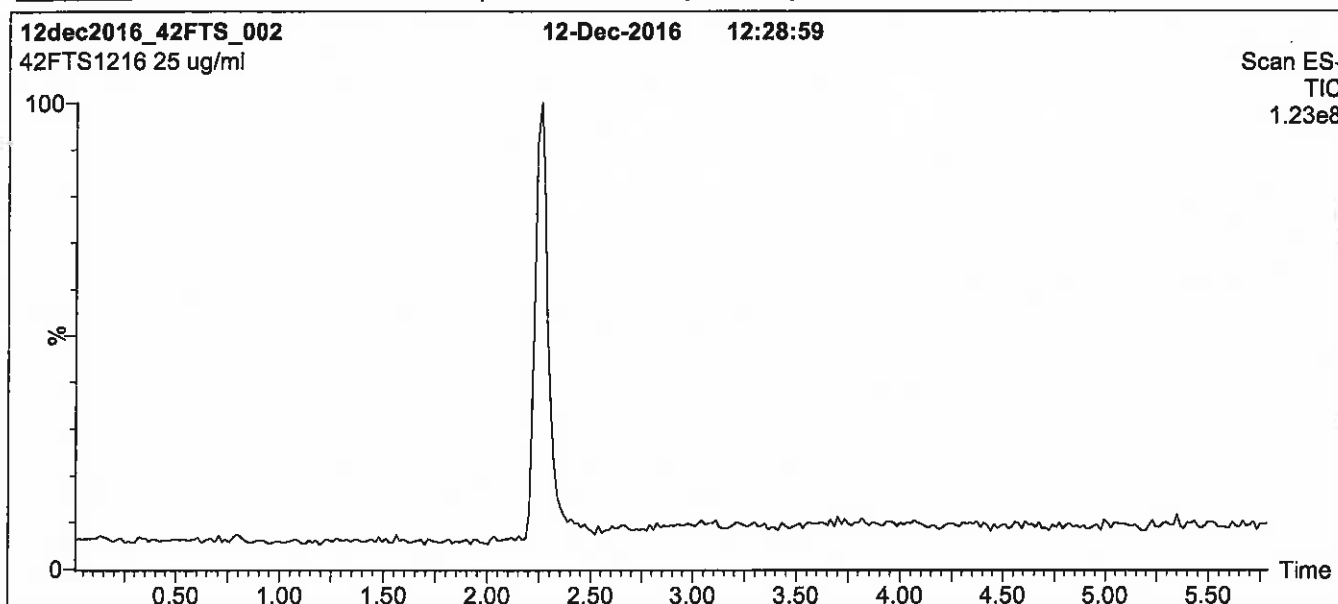
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: 4:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

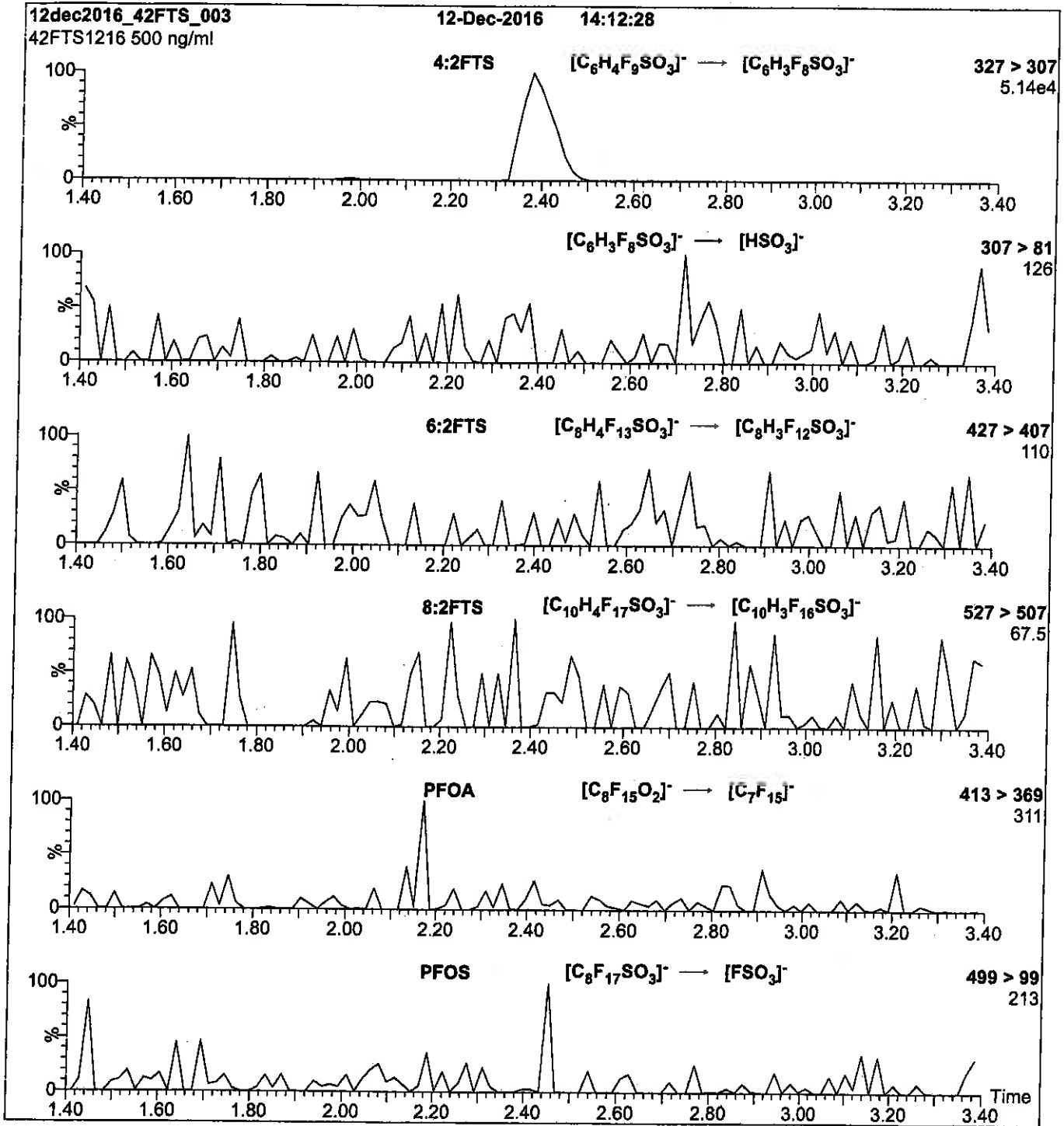
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: 4:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 4:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LC4 : 2FTS_00003

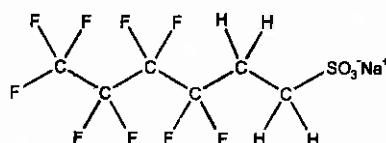


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 4:2FTS **LOT NUMBER:** 42FTS1216
COMPOUND: Sodium 1H,1H,2H,2H-perfluorohexane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_6H_4F_8SO_3Na$ **MOLECULAR WEIGHT:** 350.13
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt) **SOLVENT(S):** Methanol
 $46.7 \pm 2.3 \mu\text{g/ml}$ (4:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/12/2016
EXPIRY DATE: (mm/dd/yyyy) 12/12/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim

Date: 12/21/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

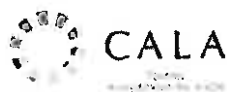
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

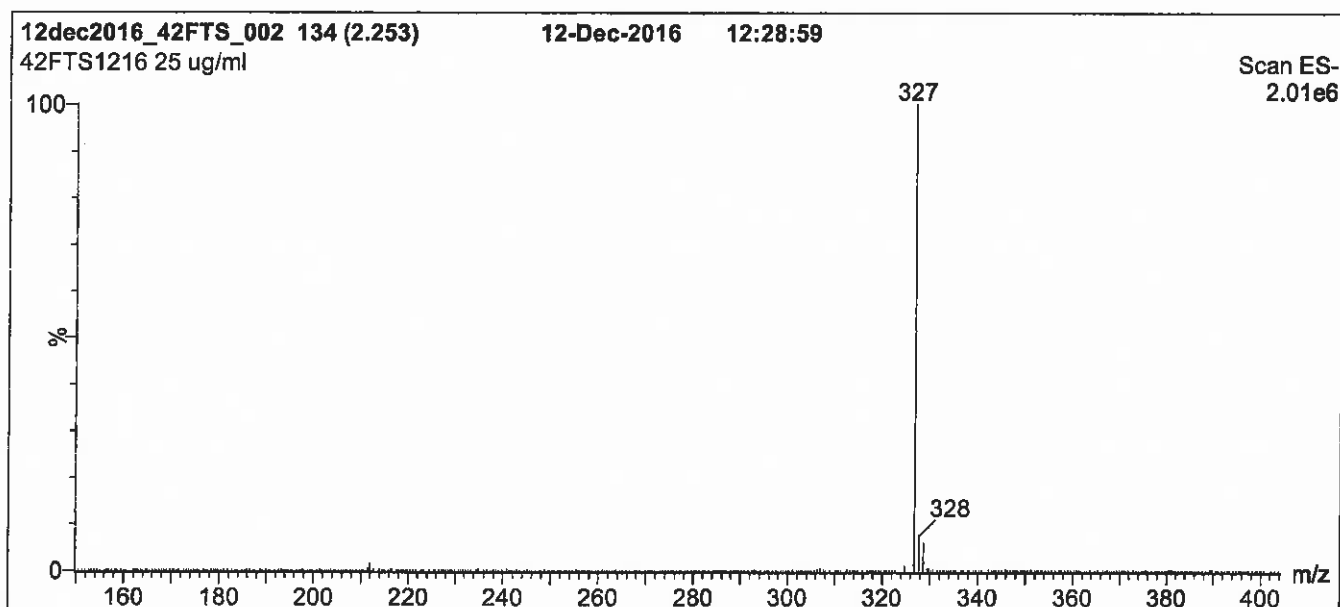
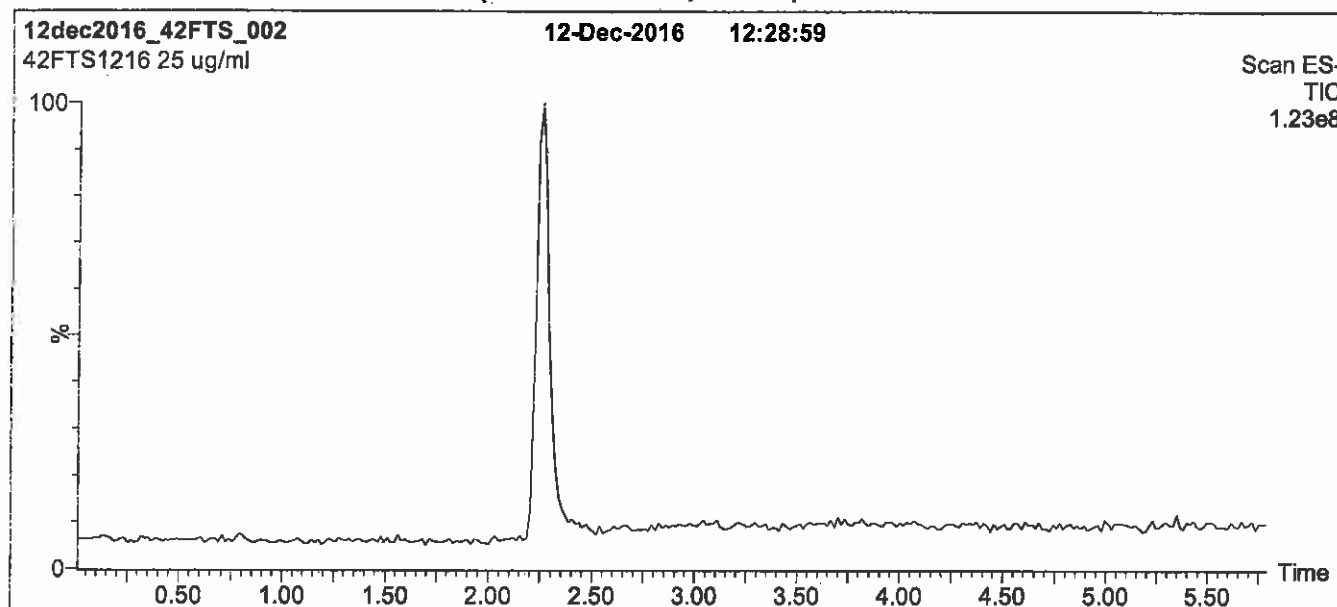
QUALITY MANAGEMENT:

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Figure 1: 4:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

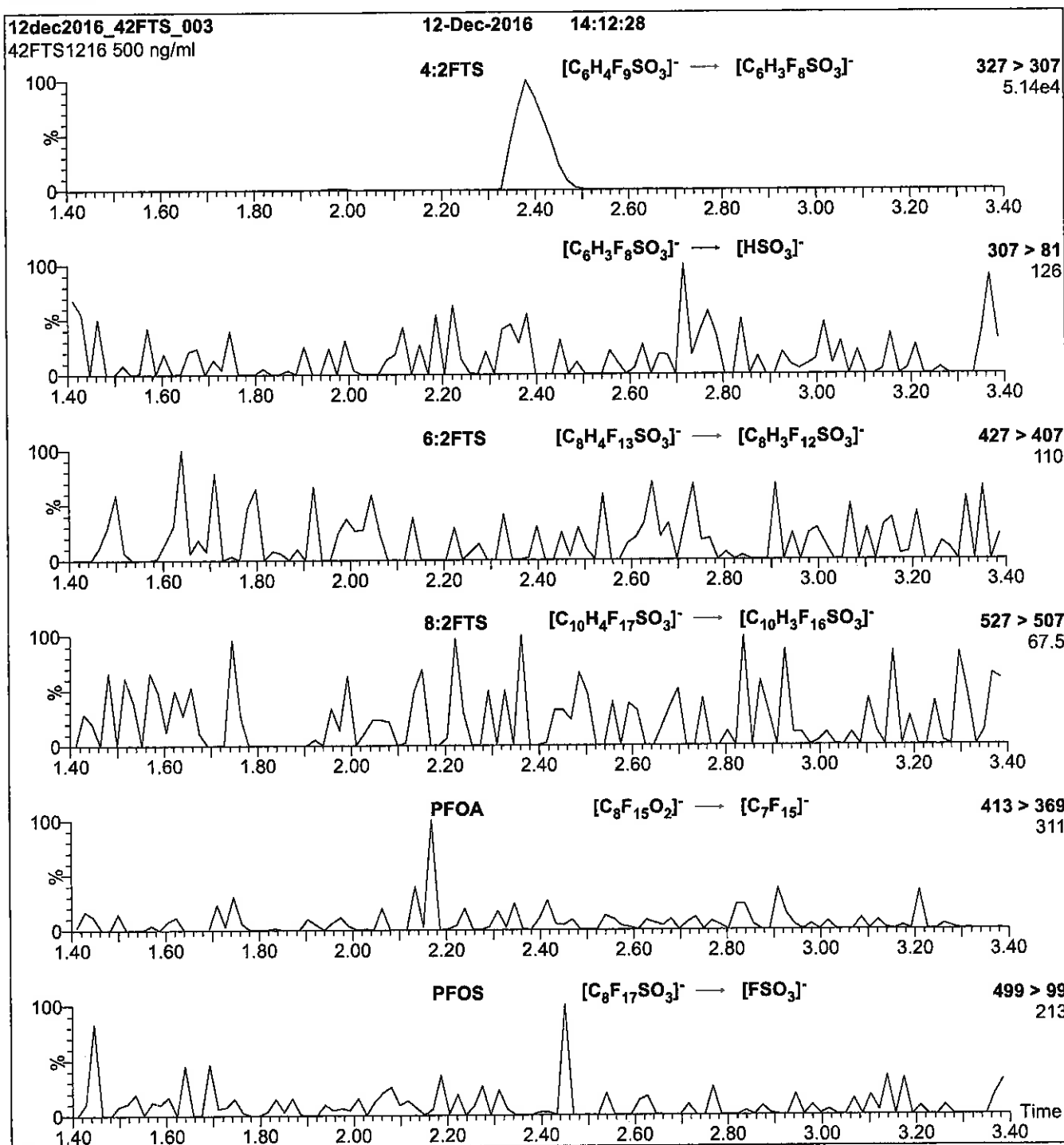
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: 4:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml 4:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
 Collision Energy (eV) = 25

Reagent

LC6:2FTS_00002

R: 8/23/16 SBC



715544
ID: LC6:2FTS_00002
Exp: 06/25/21 Prod: SBC
6:2FTS

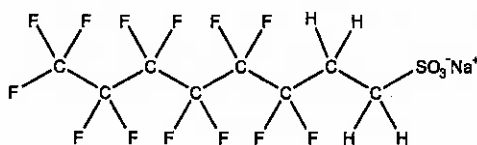


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0616
COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₈H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 450.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.4 ± 2.4 µg/ml (6:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/25/2016
EXPIRY DATE: (mm/dd/yyyy) 06/25/2021
RECOMMENDED STORAGE: Refrigerate ampoule

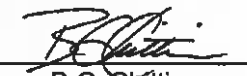
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

• See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 06/29/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

INTENDED USE:

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HAZARDS:

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Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

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where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

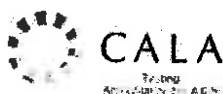
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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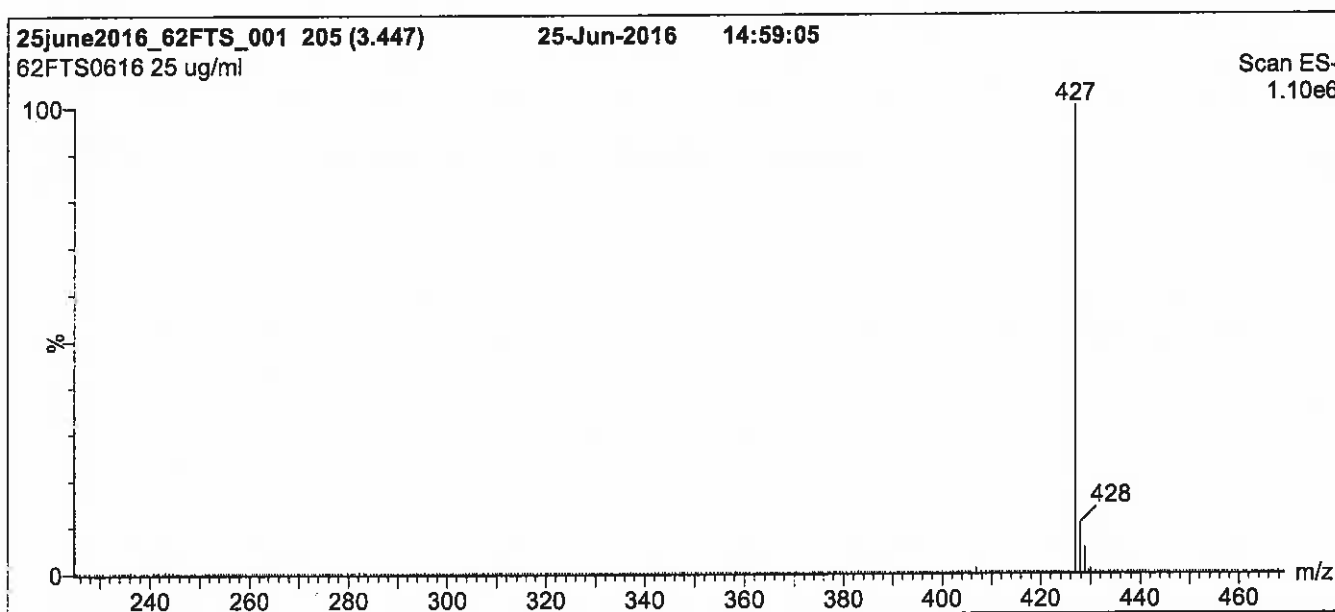
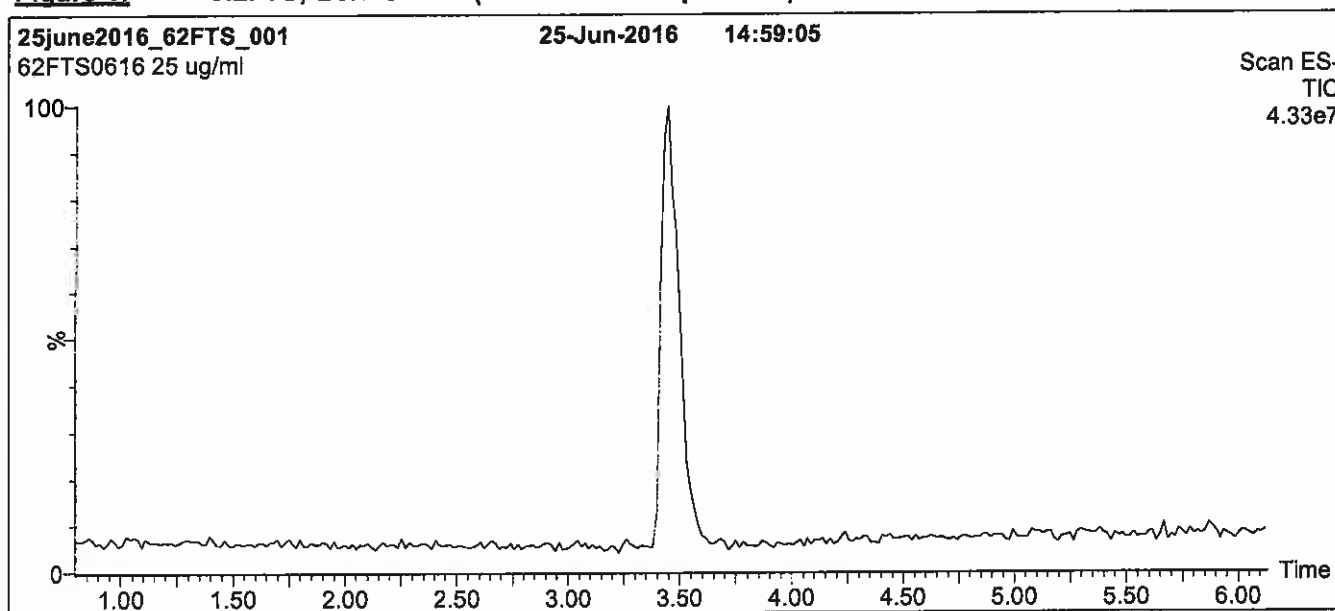
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Figure 1: 6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

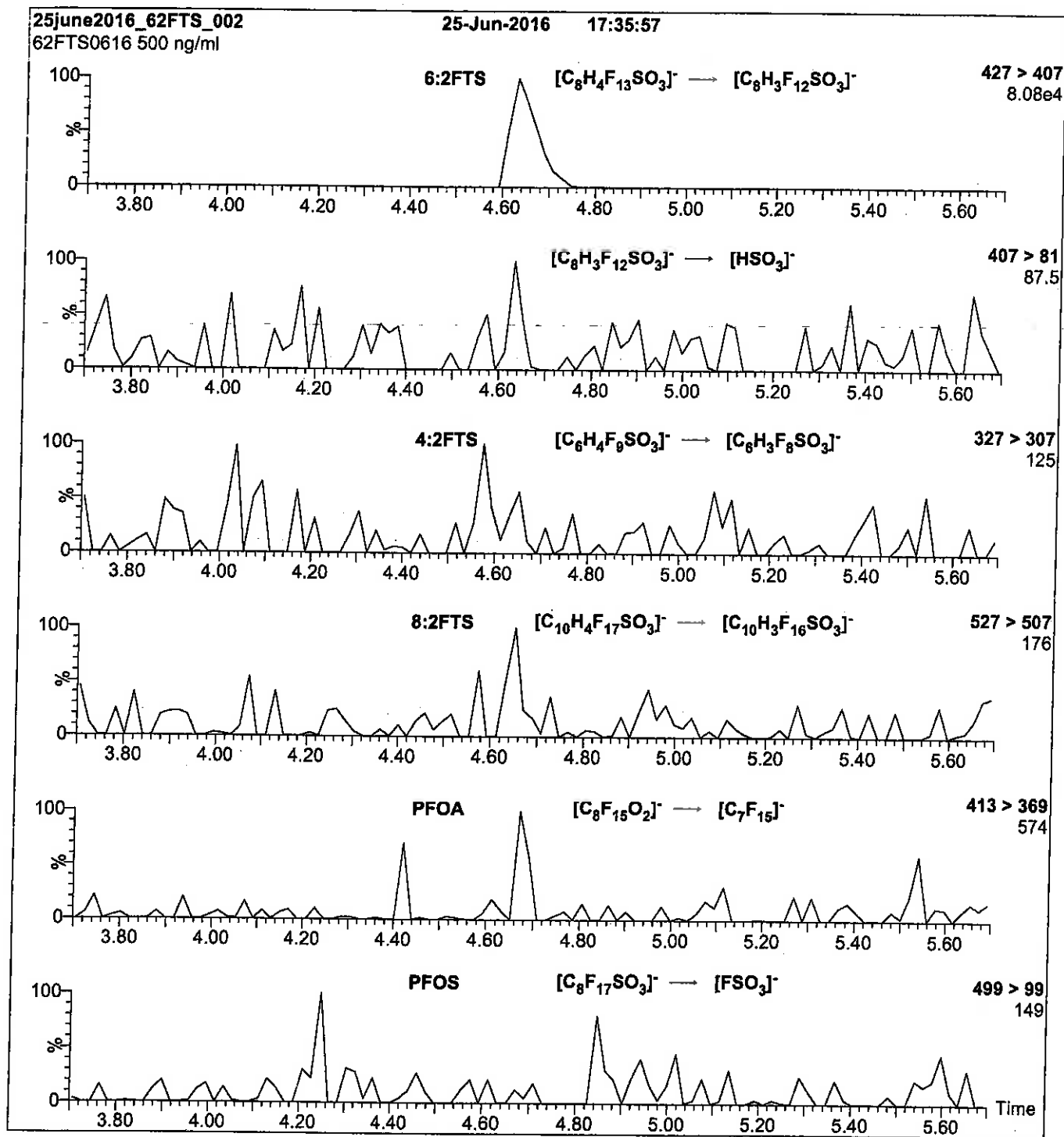
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 30.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: 6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 25

Reagent

LC6:2FTS_00003

P: 12/29/16 SKV

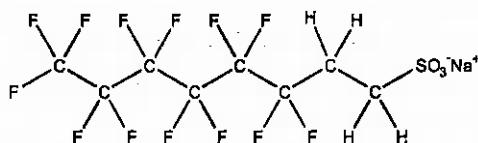


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0616
COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₈H₄F₁₅SO₃Na **MOLECULAR WEIGHT:** 450.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.4 ± 2.4 µg/ml (6:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/25/2016
EXPIRY DATE: (mm/dd/yyyy) 06/25/2021
RECOMMENDED STORAGE: Refrigerate ampoule

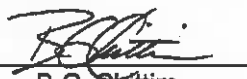
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 06/29/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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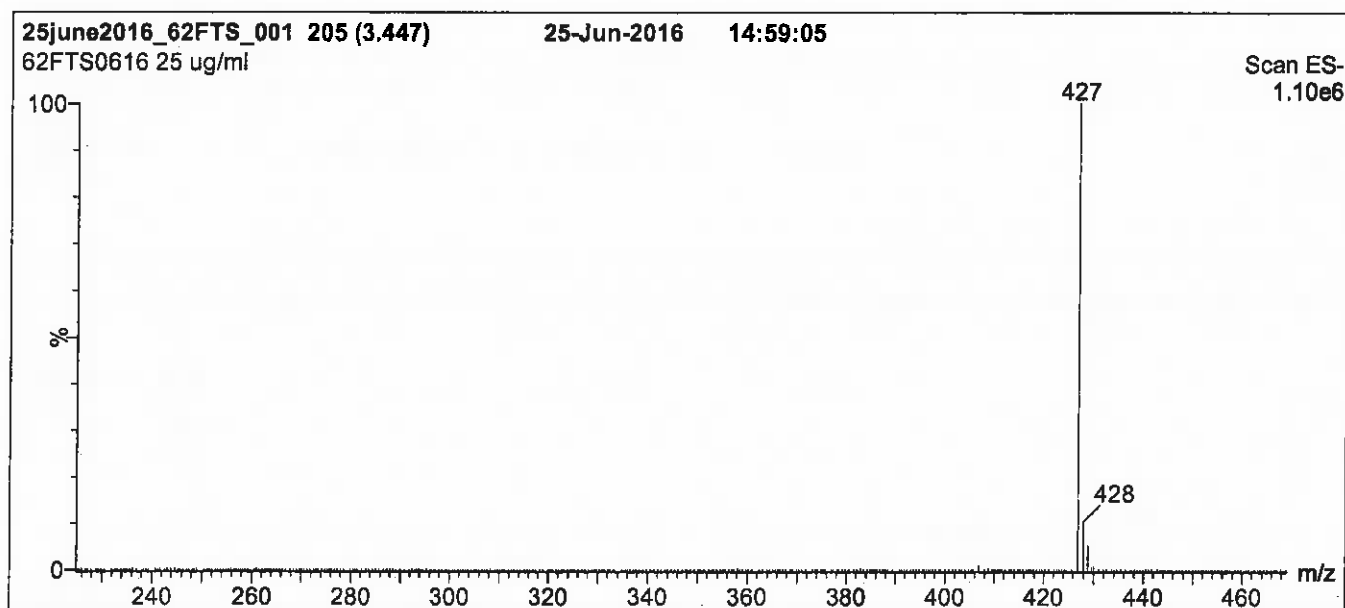
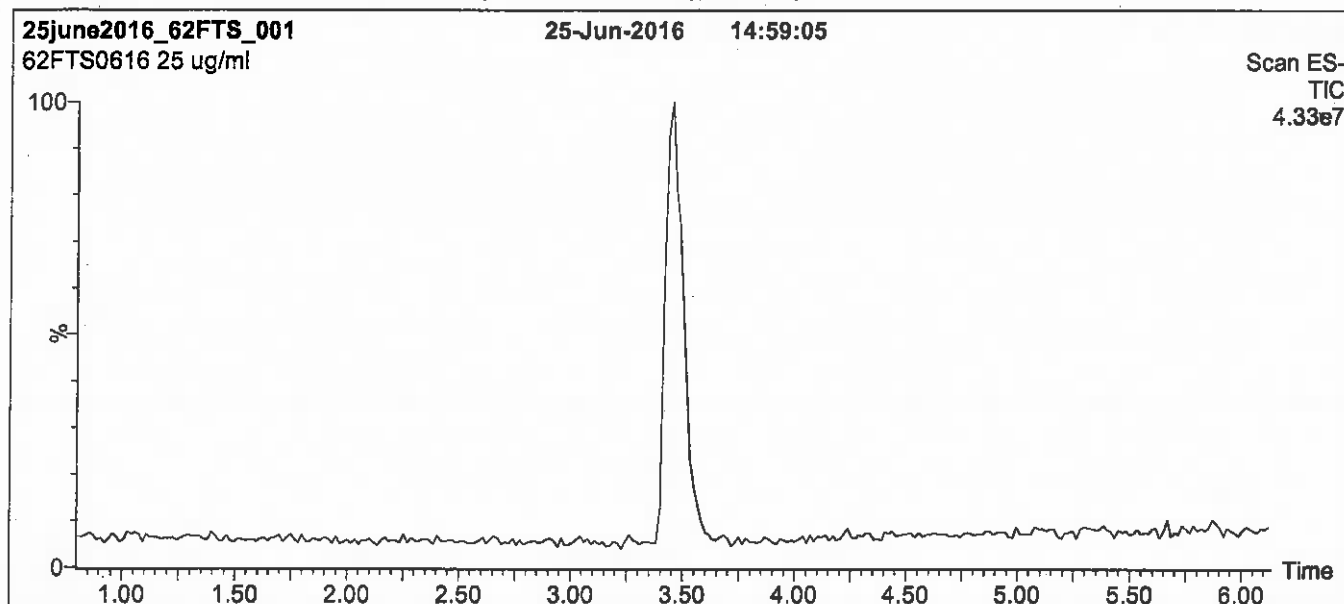
QUALITY MANAGEMENT:

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Figure 1: 6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

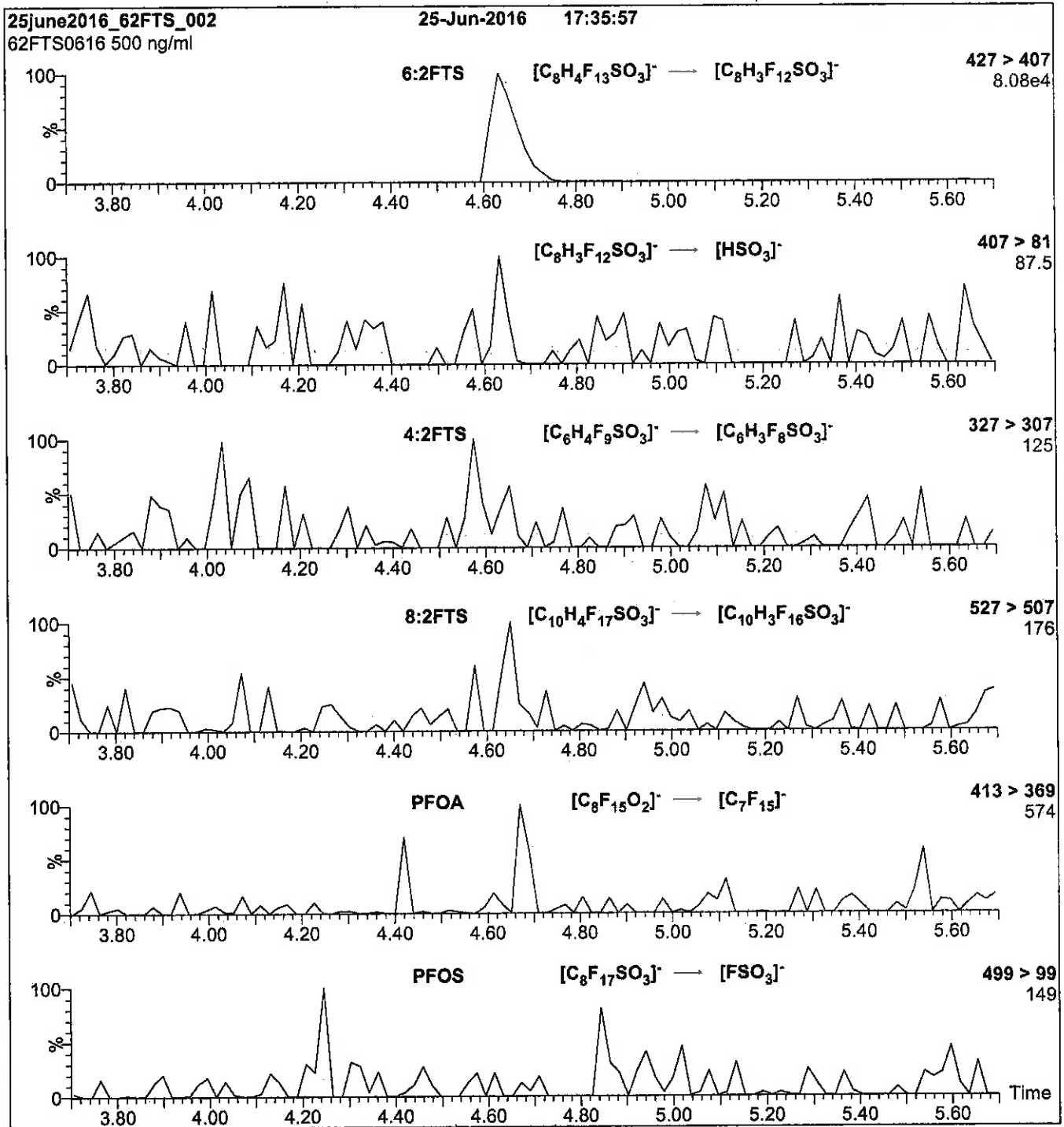
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: 6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 25

Reagent

LC8 : 2FTS _ 00002

R: 8/23/16 SBC

715545
ID: LC8:2FTS_00002
Exp: 10/23/20 Prod: SBC
8:2FTS

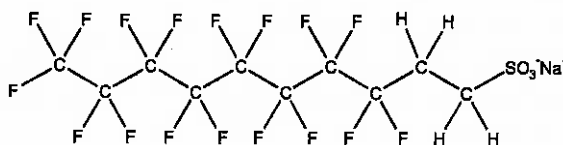


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1015
COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₀H₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 550.16
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.9 ± 2.4 µg/ml (8:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/23/2015
EXPIRY DATE: (mm/dd/yyyy) 10/23/2020
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/27/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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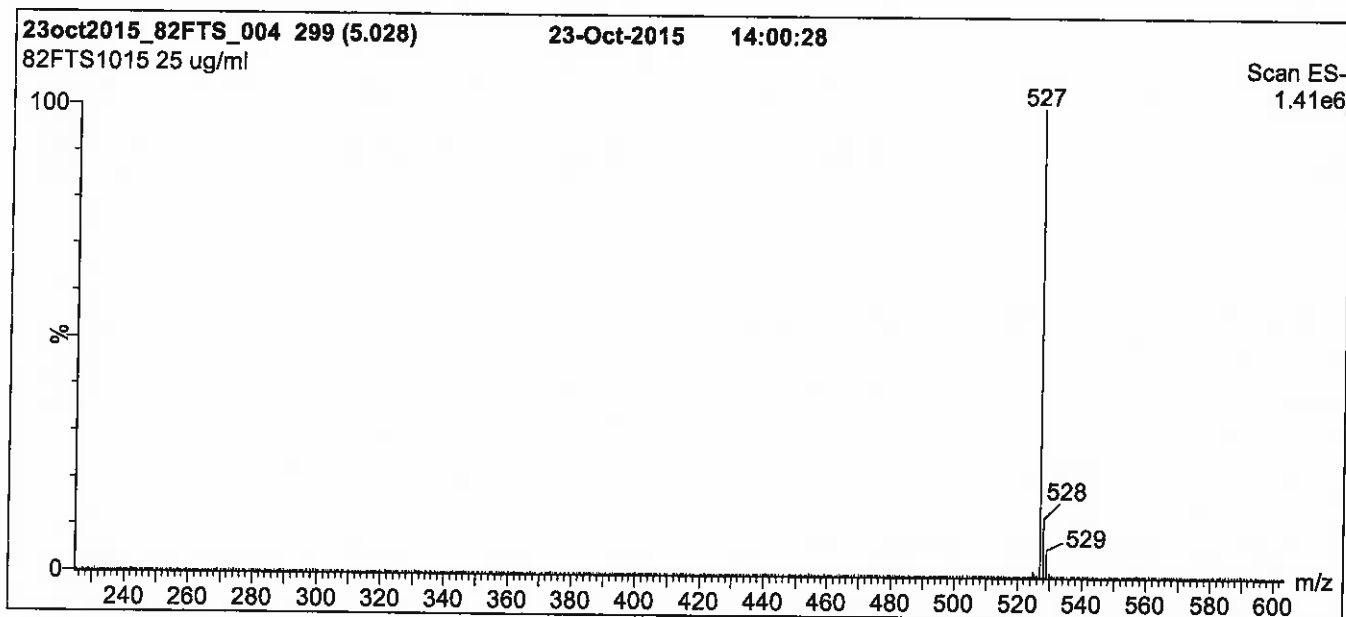
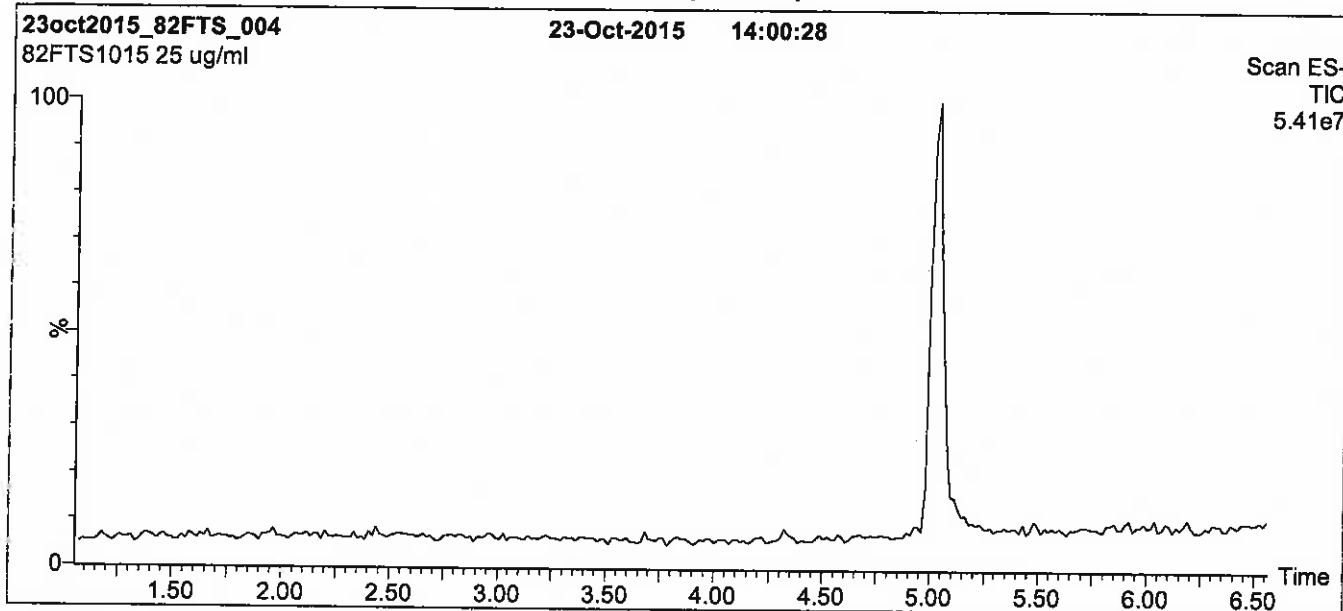
QUALITY MANAGEMENT:

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Figure 1: 8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min.
Return to Initial conditions in 0.5 min.
Time: 10 min

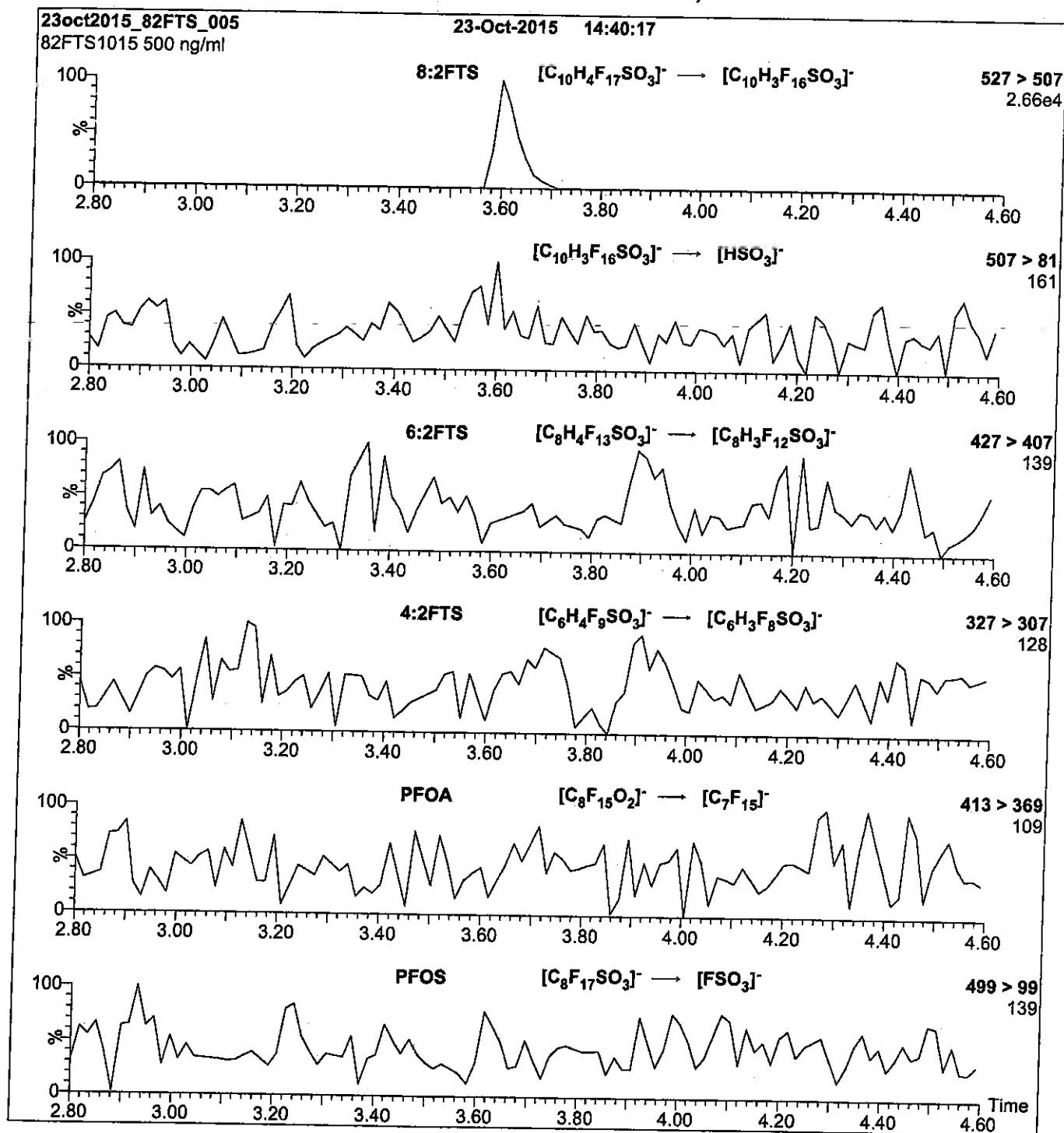
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: 8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 30

Reagent

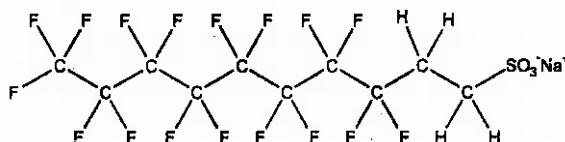
LC8 : 2FTS_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS0816
COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{10}H_4F_{17}SO_3Na$ **MOLECULAR WEIGHT:** 550.16
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt) **SOLVENT(S):** Methanol
 $47.9 \pm 2.4 \mu\text{g/ml}$ (8:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/22/2016
EXPIRY DATE: (mm/dd/yyyy) 08/22/2021
RECOMMENDED STORAGE: Refrigerate ampoule


DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
 B.G. Chittim Date: 08/25/2016
 (mm/dd/yyyy)

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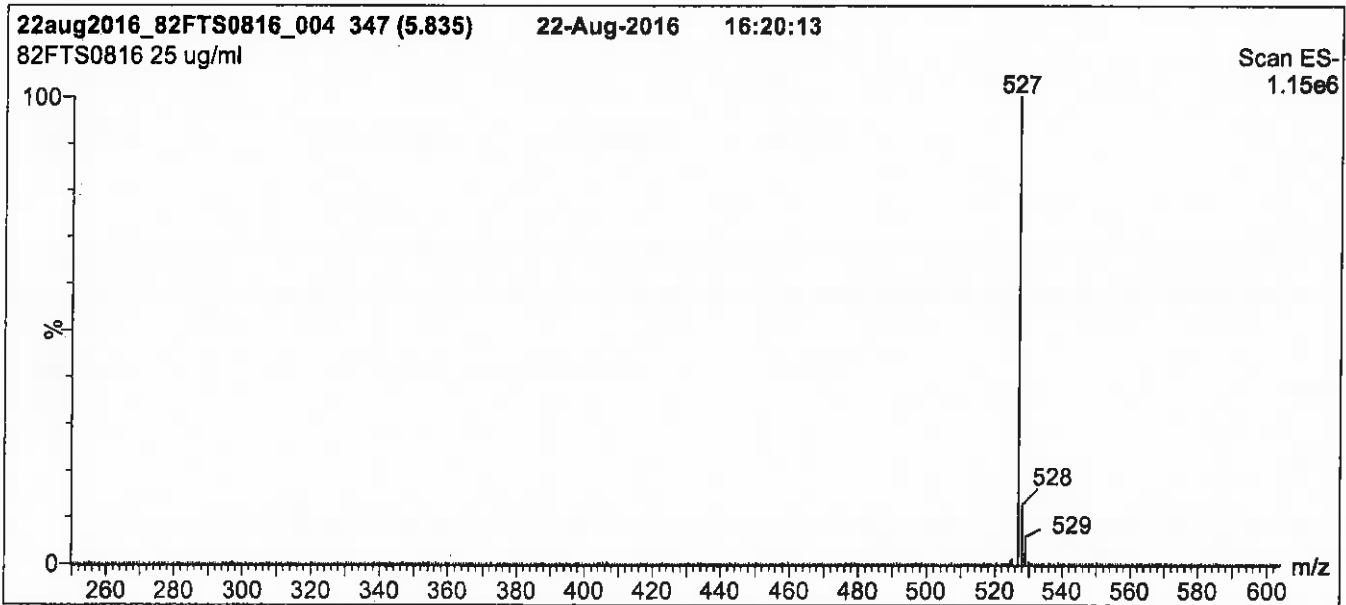
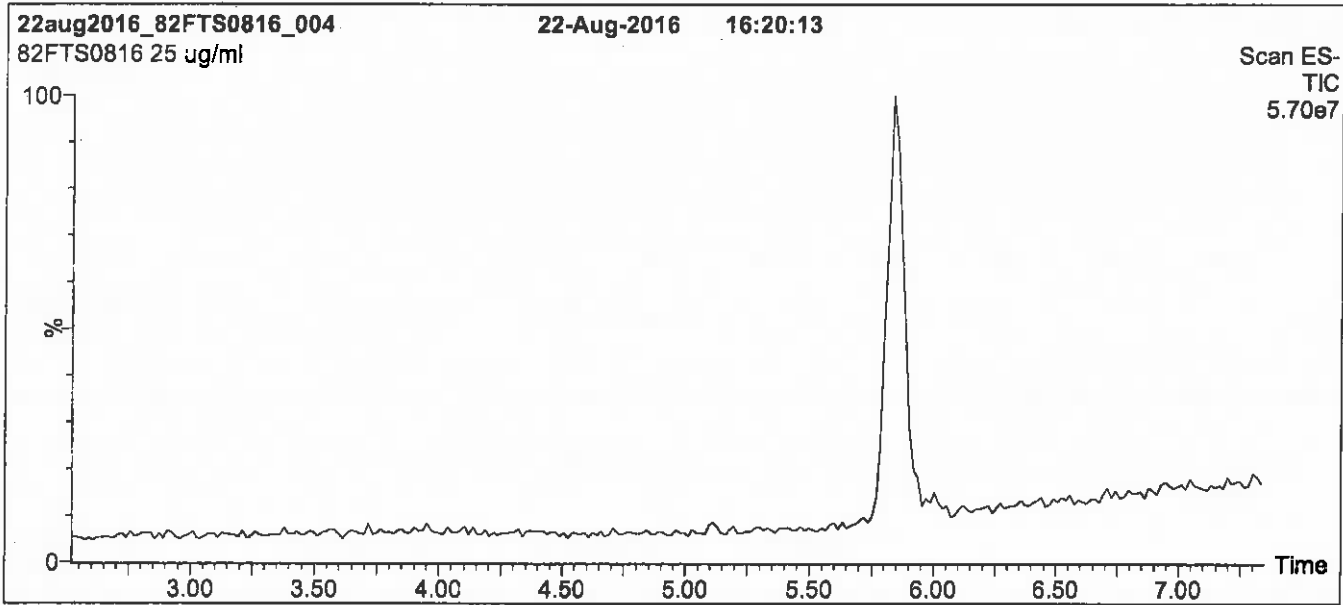
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Figure 1: 8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Agilent Zorbax Bonus-RP
1.8 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH/ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

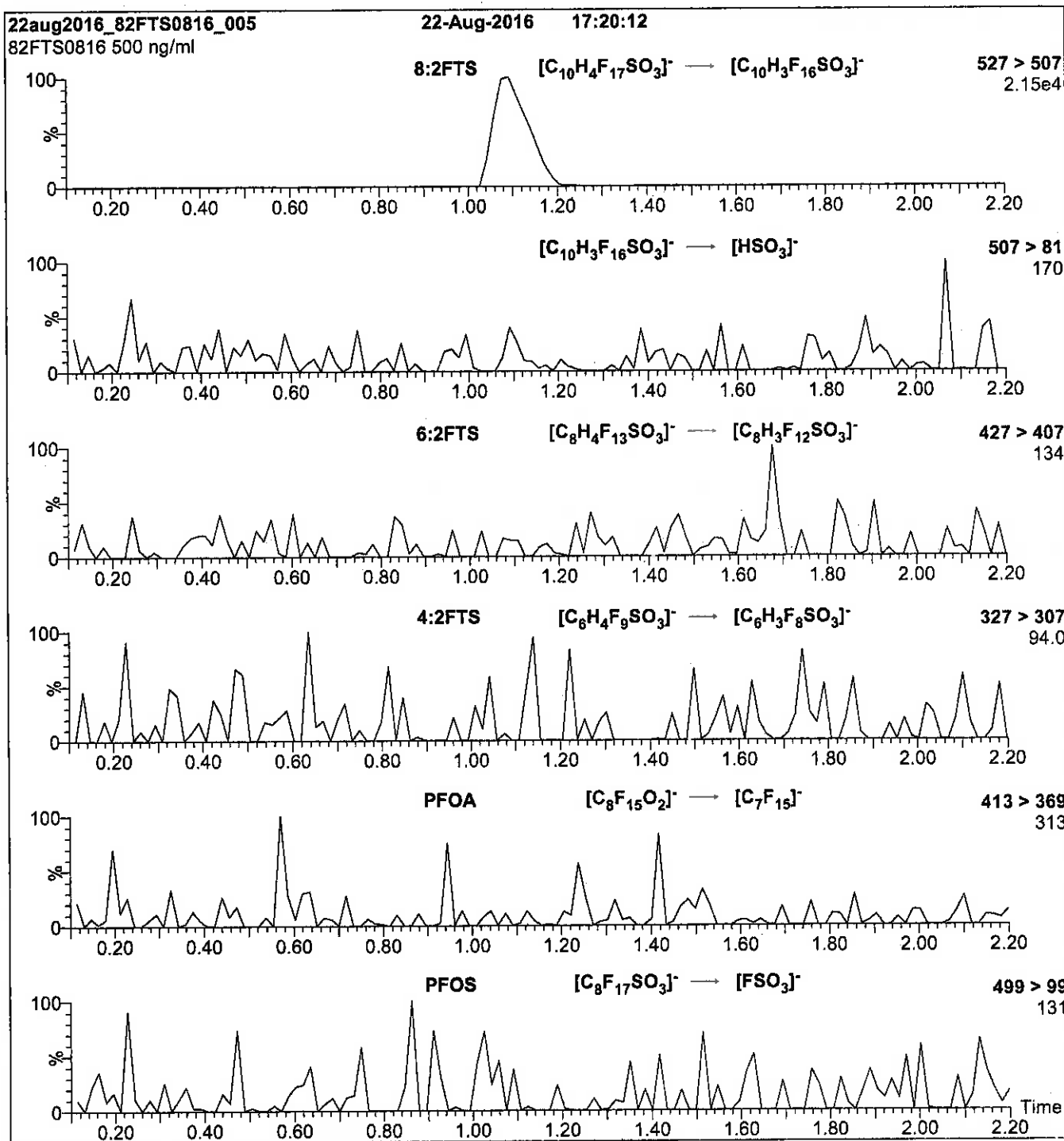
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250- 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: 8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 30

Reagent

LCd-NEtFOSA-M_00005

R: 3720/17



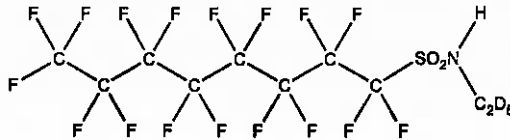
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
COMPOUND: N-ethyl-d₅-perfluoro-1-octanesulfonamide

LOT NUMBER: dNEtFOSA0616M

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₀D₅HF₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/10/2016
EXPIRY DATE: (mm/dd/yyyy) 06/10/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 532.23
SOLVENT(S): Methanol
ISOTOPIC PURITY: ≥98% ²H₅


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of N-methyl-d₃-perfluoro-1-octanesulfonamide (d-N-MeFOSA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 07/14/2016
(mm/dd/yyyy)

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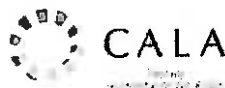
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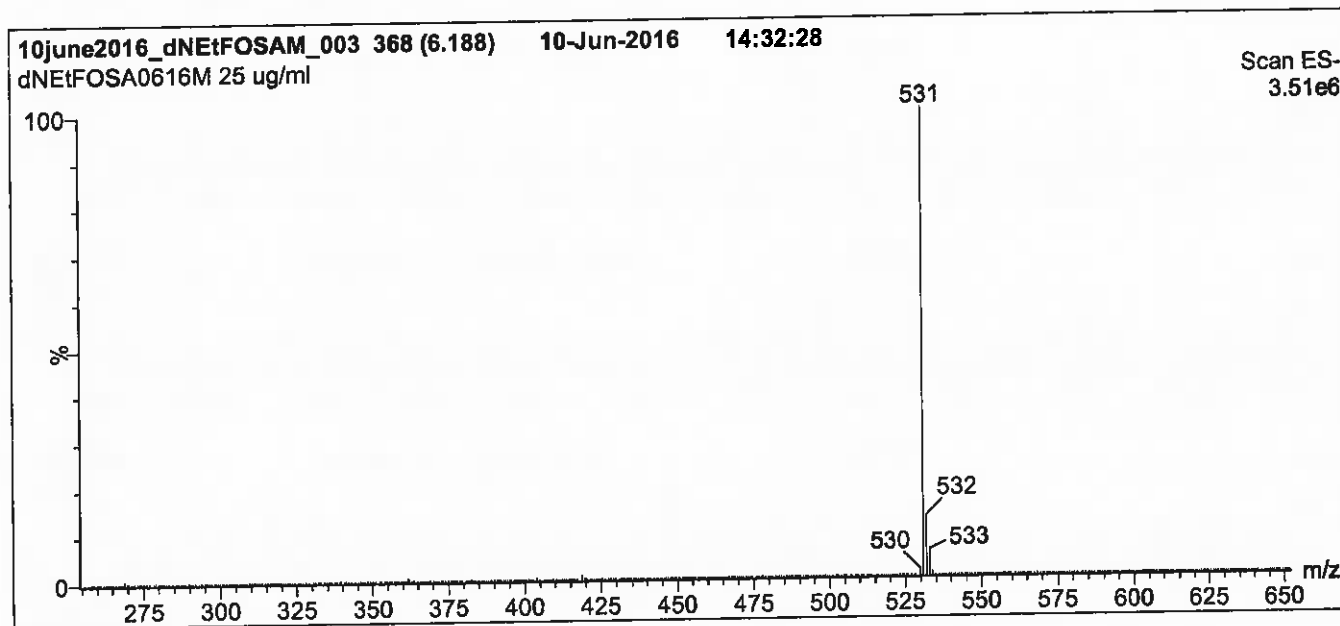
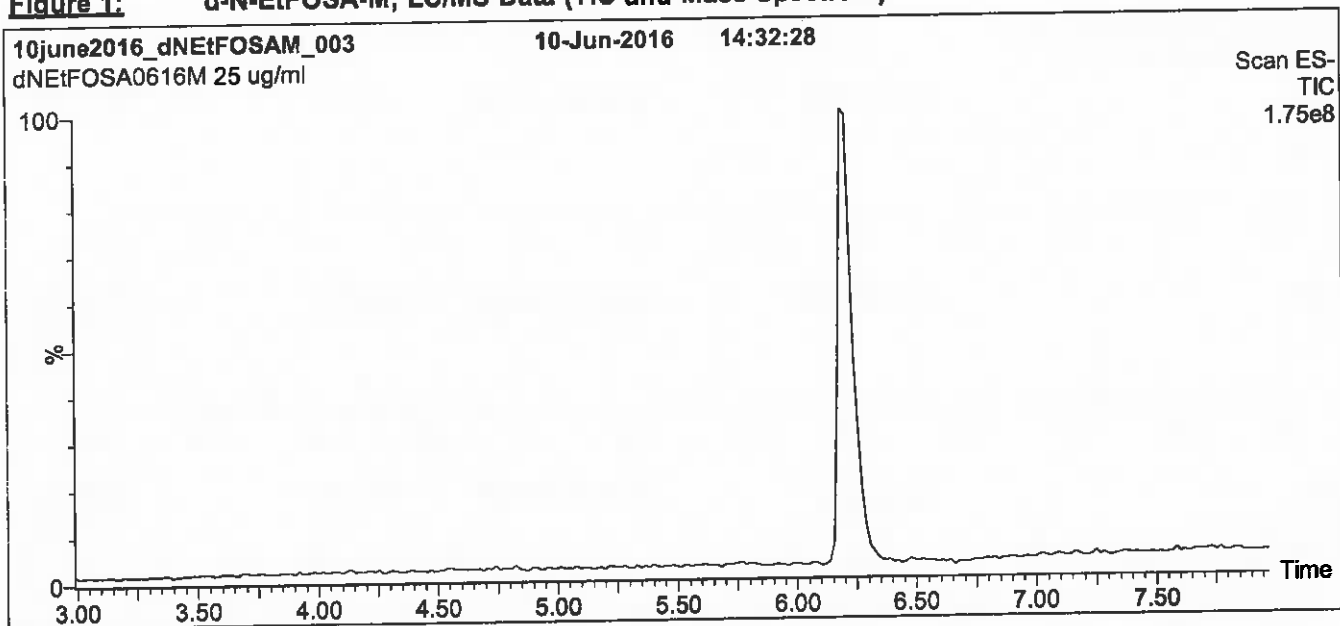
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Figure 1: d-N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 40% H₂O / 60% (80:20 MeOH:ACN)
 (both with 10mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

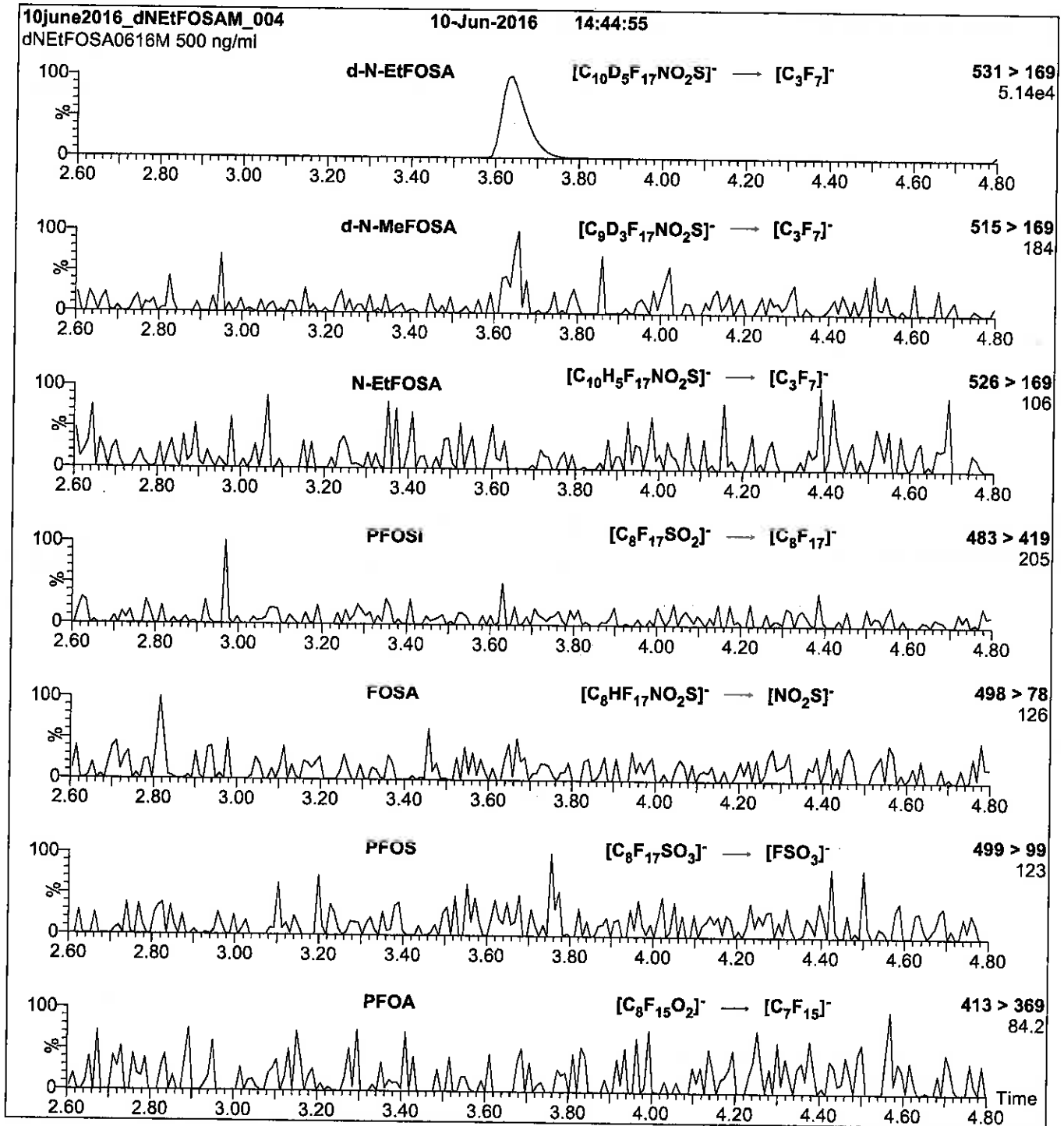
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.50
 Cone Voltage (V) = 40.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: d-N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d-N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

Reagent

LCd-NMeFOSA-M_00004

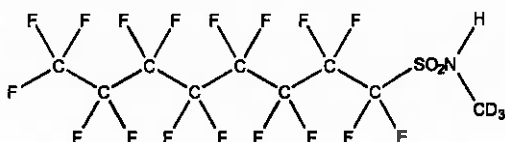


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M **LOT NUMBER:** dNMeFOSA0616M
COMPOUND: N-methyl-d₃-perfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₈D₃HF₁₇NO₂S **MOLECULAR WEIGHT:** 516.19
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% ²H₃
LAST TESTED: (mm/dd/yyyy) 06/10/2016
EXPIRY DATE: (mm/dd/yyyy) 06/10/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

• See page 2 for further details.

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Certified By:

B.G. Chittim

Date: 06/16/2016

(mm/dd/yyyy)

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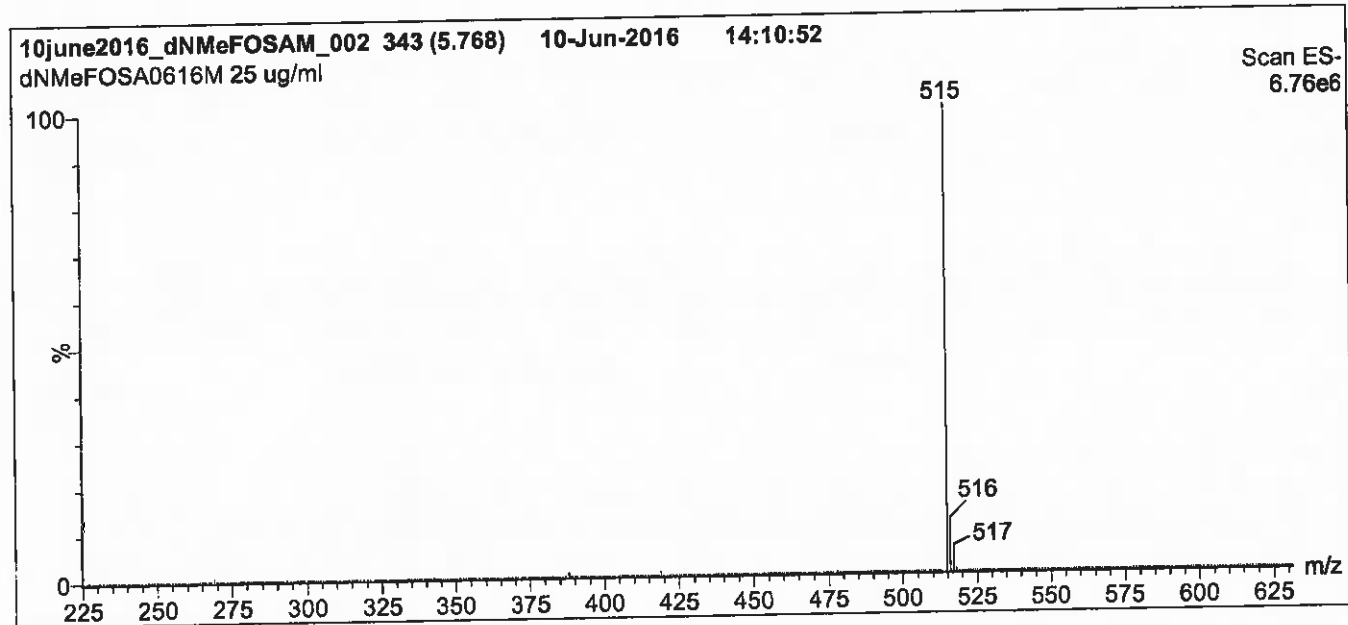
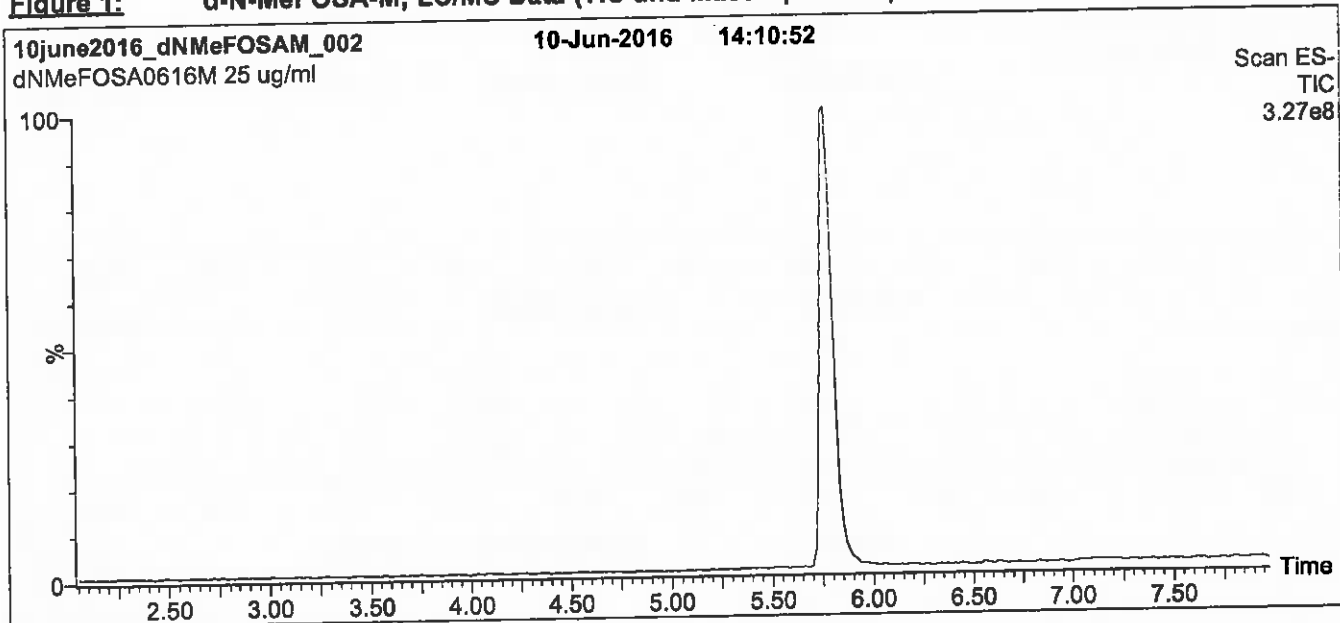
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 before returning to initial conditions in 0.5 min.
 Time: 10 min

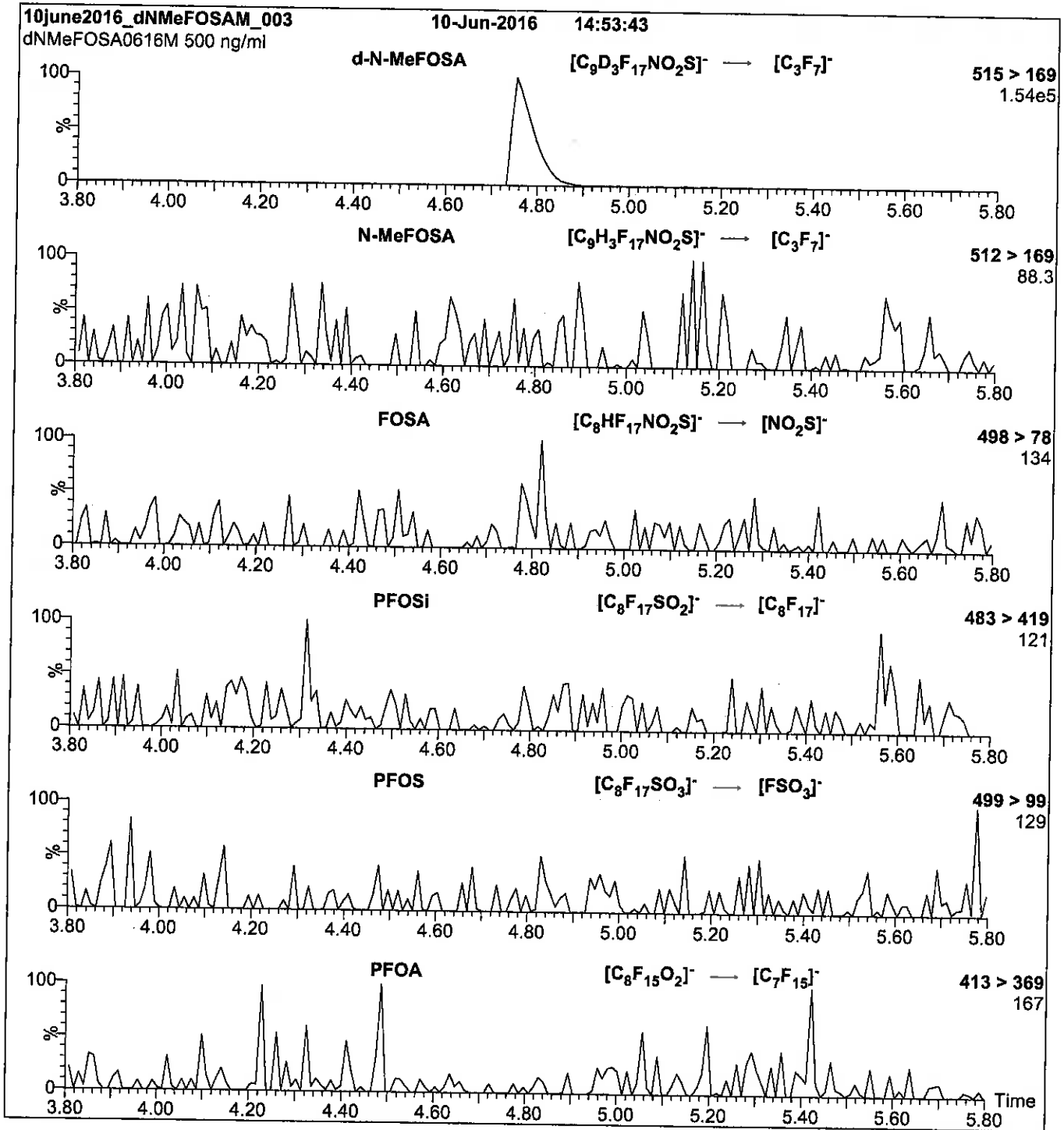
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.50
 Cone Voltage (V) = 40.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: d-N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d-N-MeFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

Reagent

LCd3-NMeFOSAA_00004

S: 3/20/17 SKV

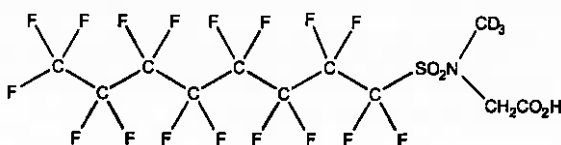


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA1116
COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



| | | | |
|----------------------------------|---|--------------------------|----------------------------------|
| MOLECULAR FORMULA: | C ₁₁ D ₃ H ₃ F ₁₇ NO ₄ S | MOLECULAR WEIGHT: | 574.23 |
| CONCENTRATION: | 50 ± 2.5 µg/ml | SOLVENT(S): | Methanol Water (<1%) |
| CHEMICAL PURITY: | >98% | ISOTOPIC PURITY: | ≥98% ² H ₃ |
| LAST TESTED: (mm/dd/yyyy) | 11/22/2016 | | |
| EXPIRY DATE: (mm/dd/yyyy) | 11/22/2021 | | |
| RECOMMENDED STORAGE: | Refrigerate ampoule | | |

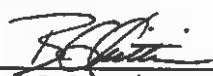
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 12/07/2016
 B.G. Chittim (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDS) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

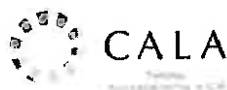
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

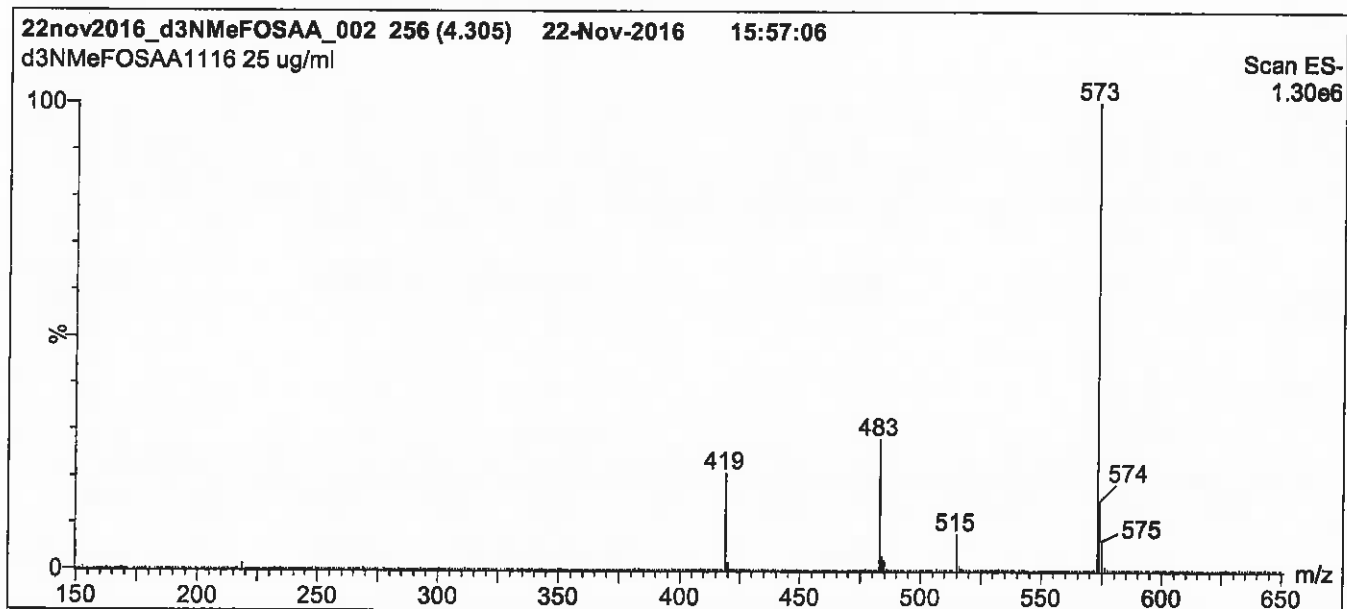
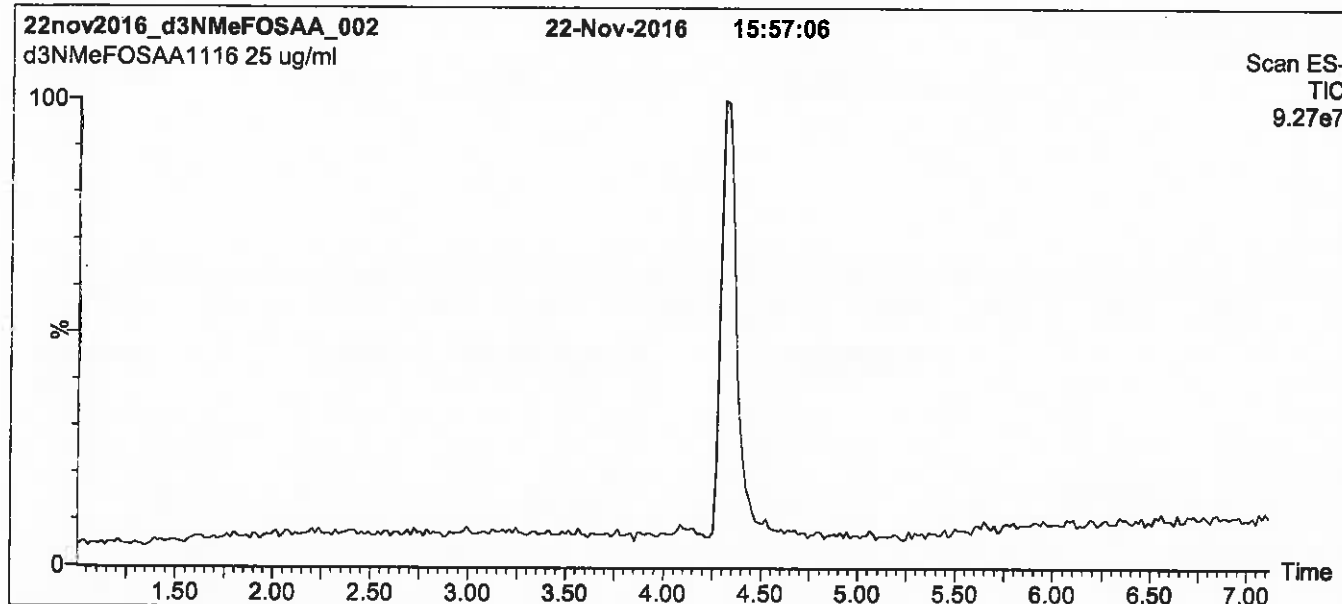
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to Initial conditions in 0.5 min.
 Time: 10 min

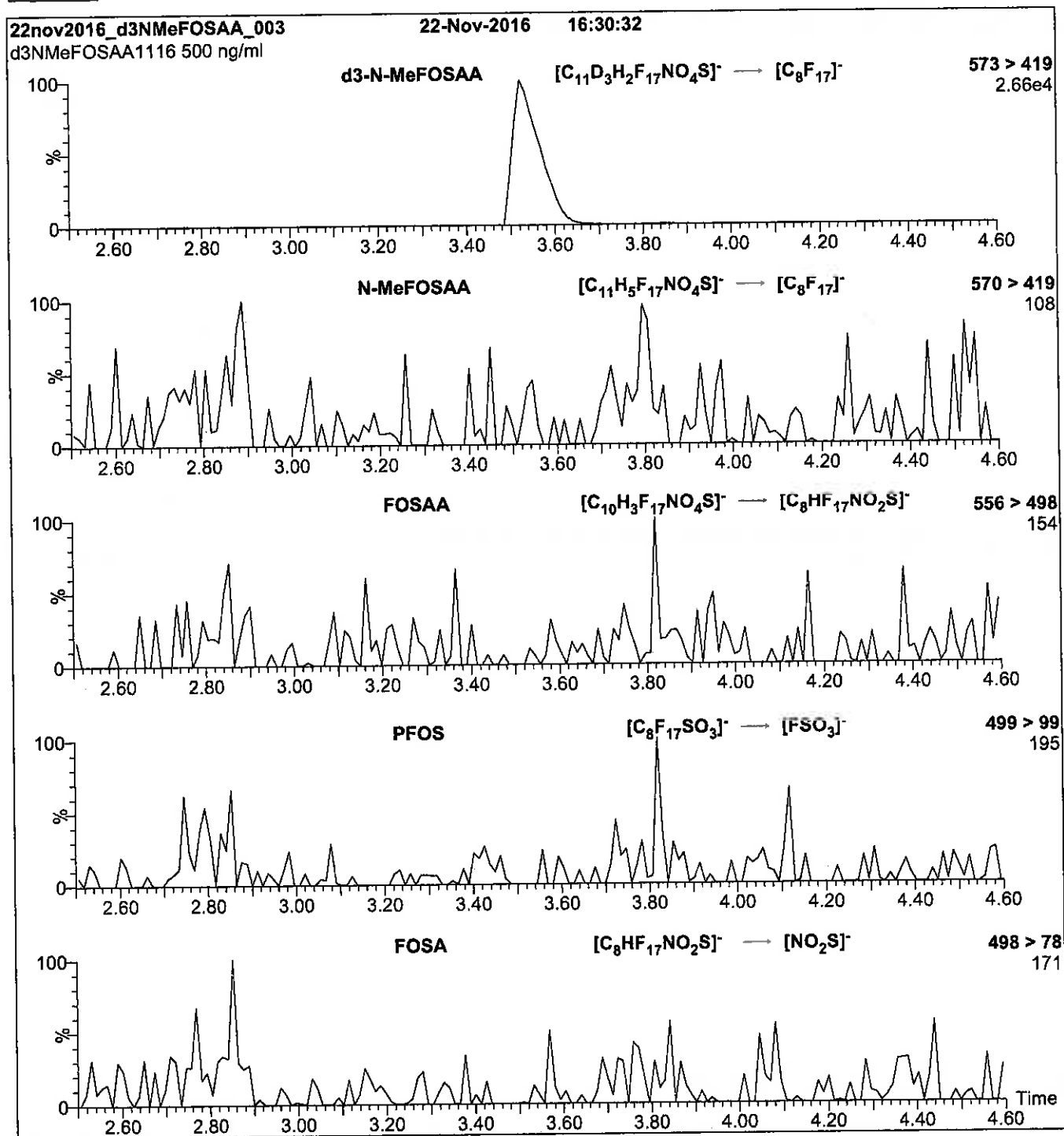
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 35.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Flow: 300 μ l/min

Figure 2: d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop Injection
10 μ l (500 ng/ml d3-N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 20

Reagent

LCd5-NEtFOSAA_00004

P: 3/20/17 SW

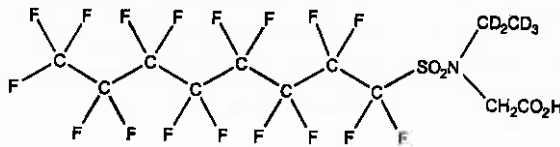


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA1116
COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₂D₆H₃F₁₇NO₄S
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 590.26
SOLVENT(S): Methanol
 Water (<1%)
ISOTOPIC PURITY: ≥98% ²H₅

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Refrigerate ampoule


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 12/01/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

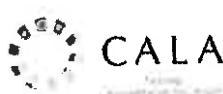
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

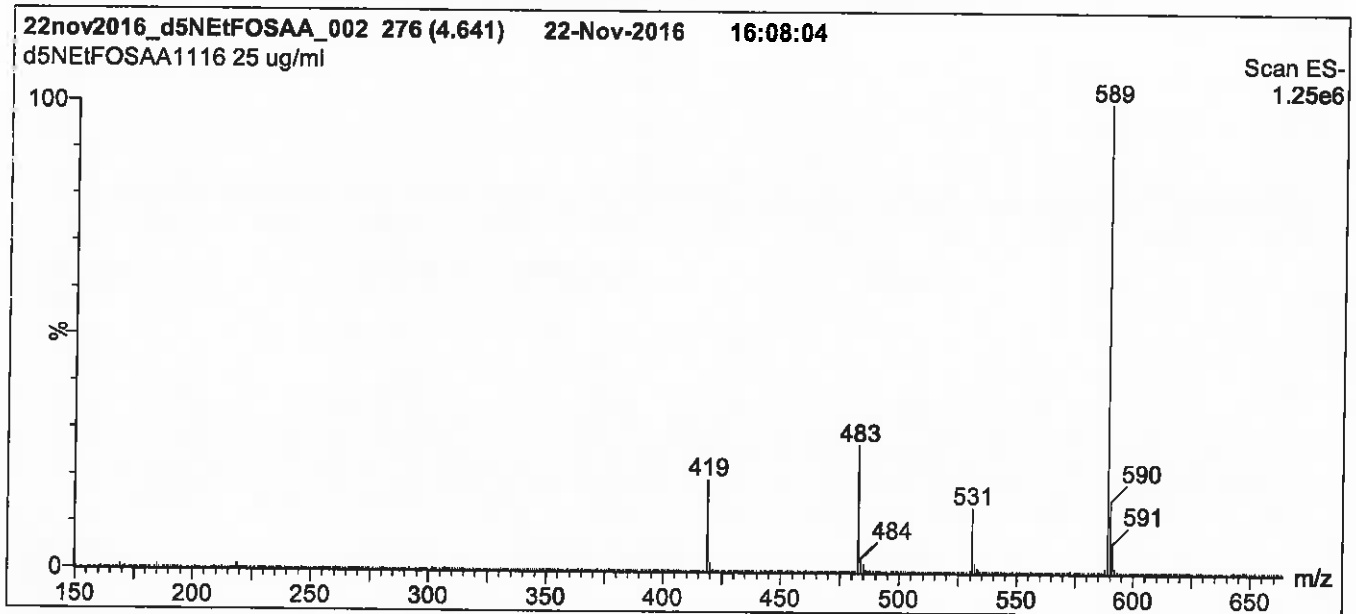
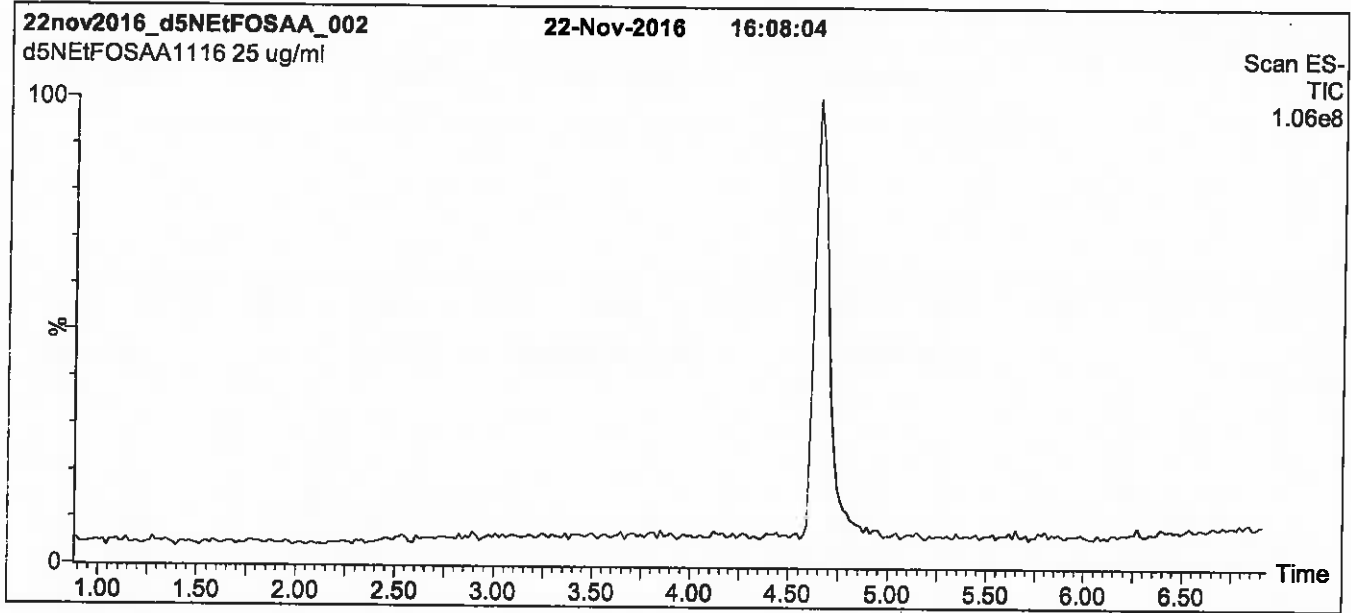
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

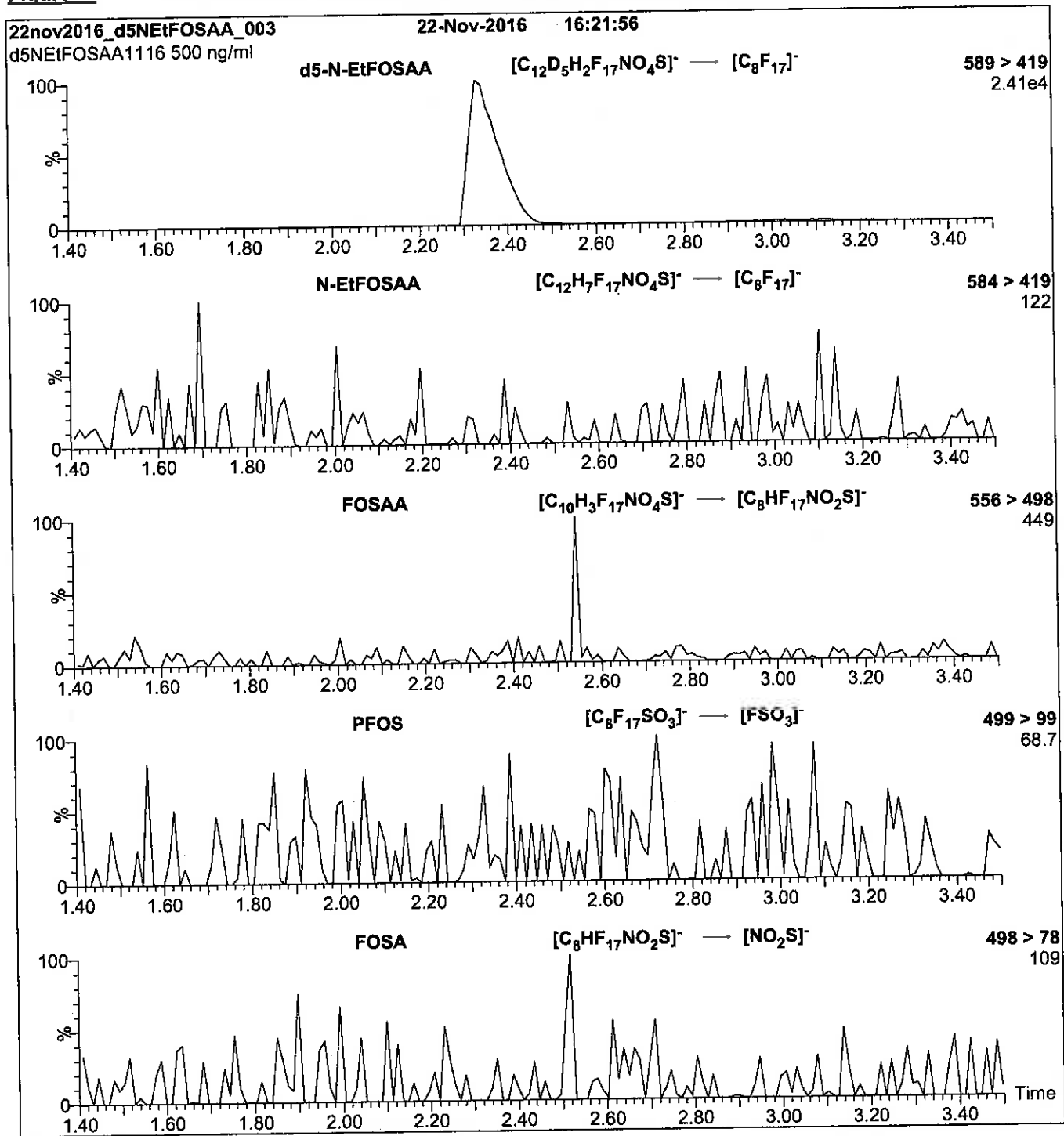
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 35.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml d5-N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
 Collision Energy (eV) = 20

Reagent

LCM2-6:FTS_00002

R: 7/6/16 CSW

671575
ID: LCM2-6:F2S_00002
Exp: 01/08/21 Prod: CSW
M2-6:2F2S

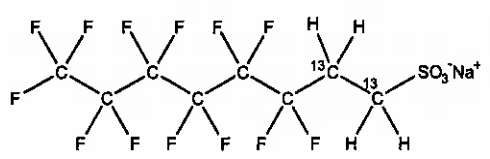


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2F2S **LOT NUMBER:** M262F2S0116
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 452.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.5 ± 2.4 µg/ml (M2-6:2F2S anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 01/08/2016 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 01/08/2021
RECOMMENDED STORAGE: Refrigerate ampoule


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2F2S contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2F2S and M2-6:2F2S will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2F2S during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 01/11/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

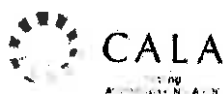
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LIMITED WARRANTY:

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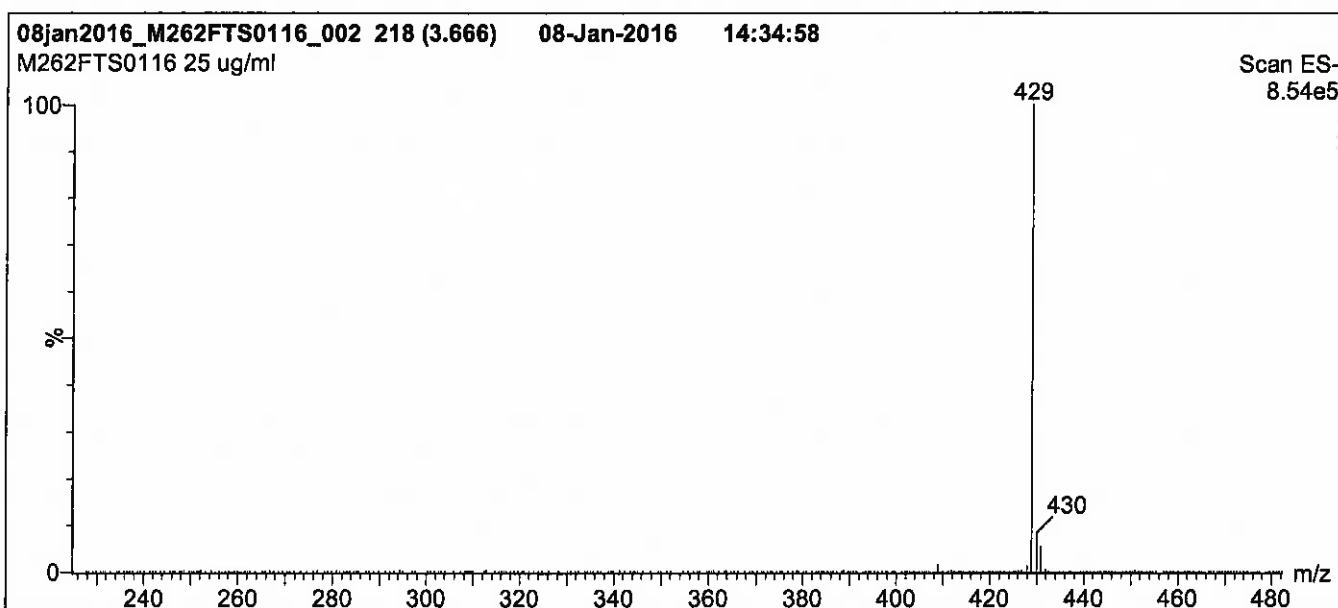
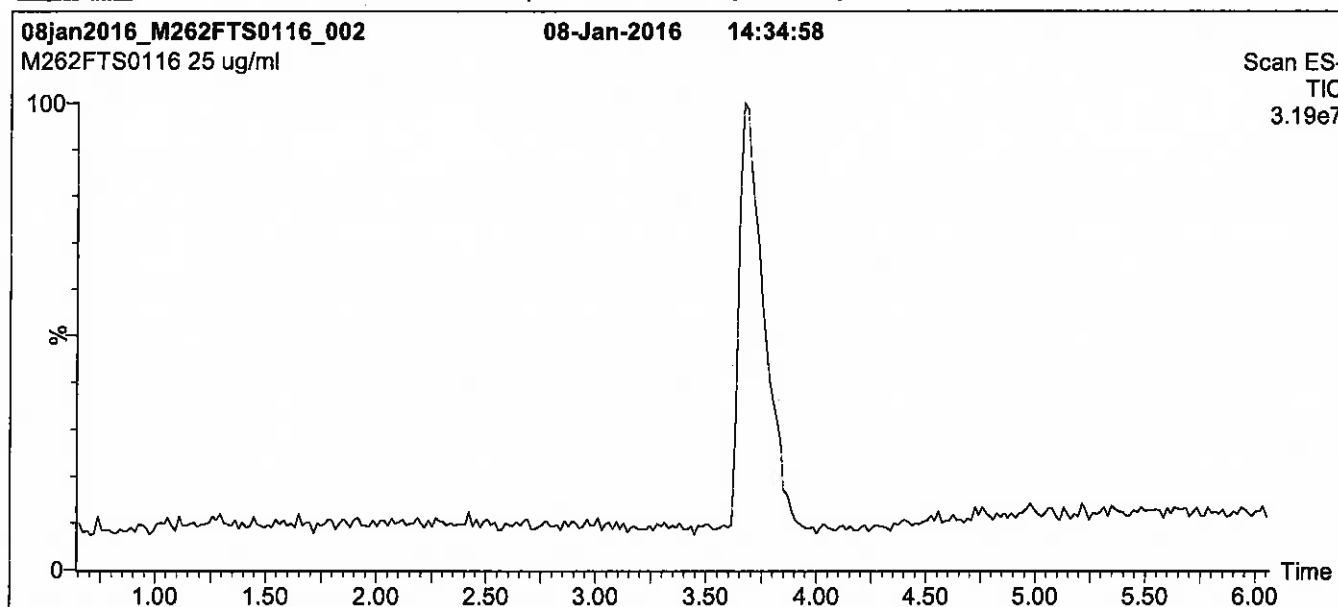
QUALITY MANAGEMENT:

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Figure 1: M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

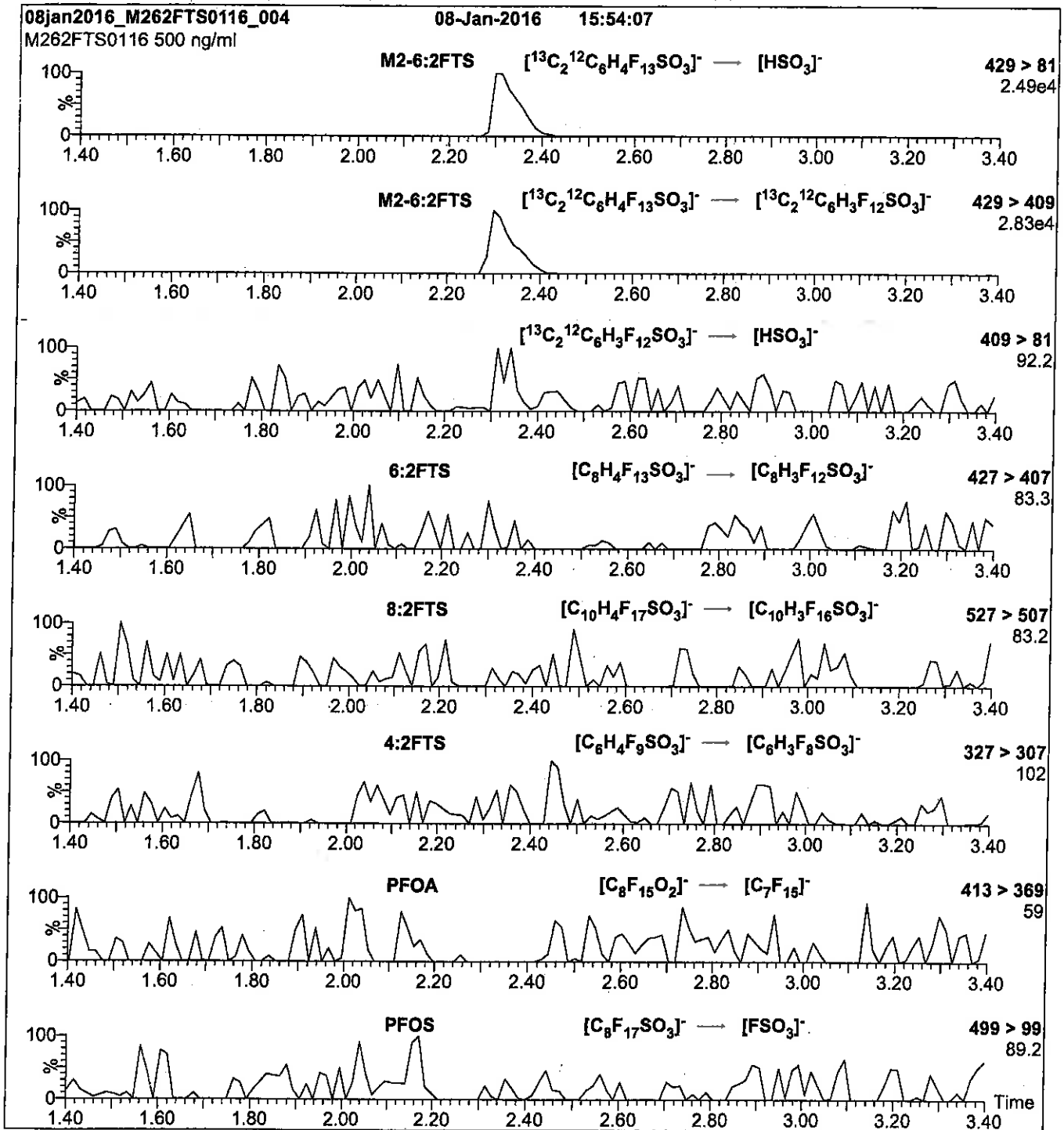
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-6:2FTS)

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 25

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

Reagent

LCM2-6:FTS_00004

N 3/20/17 SKV

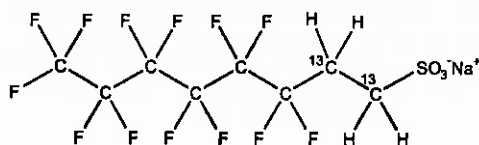


**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0217
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₀SO₃Na **MOLECULAR WEIGHT:** 452.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.5 ± 2.4 µg/ml (M2-6:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 02/17/2017 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 02/17/2022
RECOMMENDED STORAGE: Refrigerate ampoule


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 02/24/2017
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

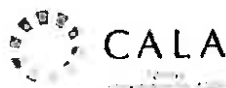
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

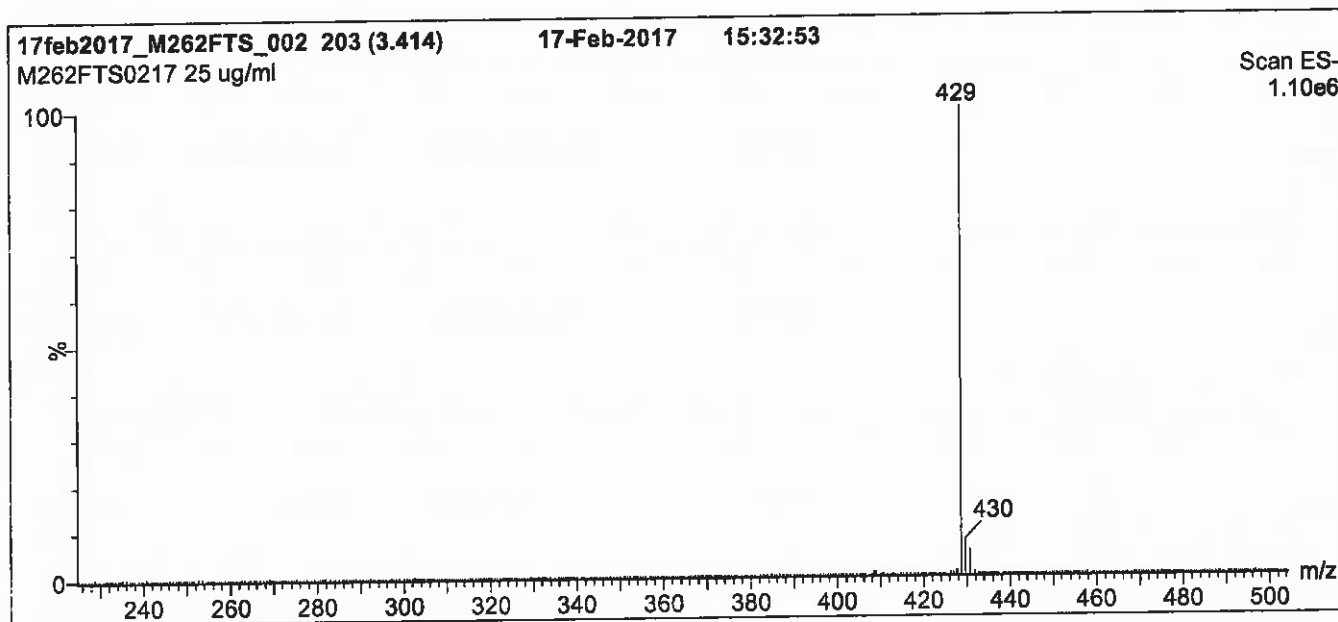
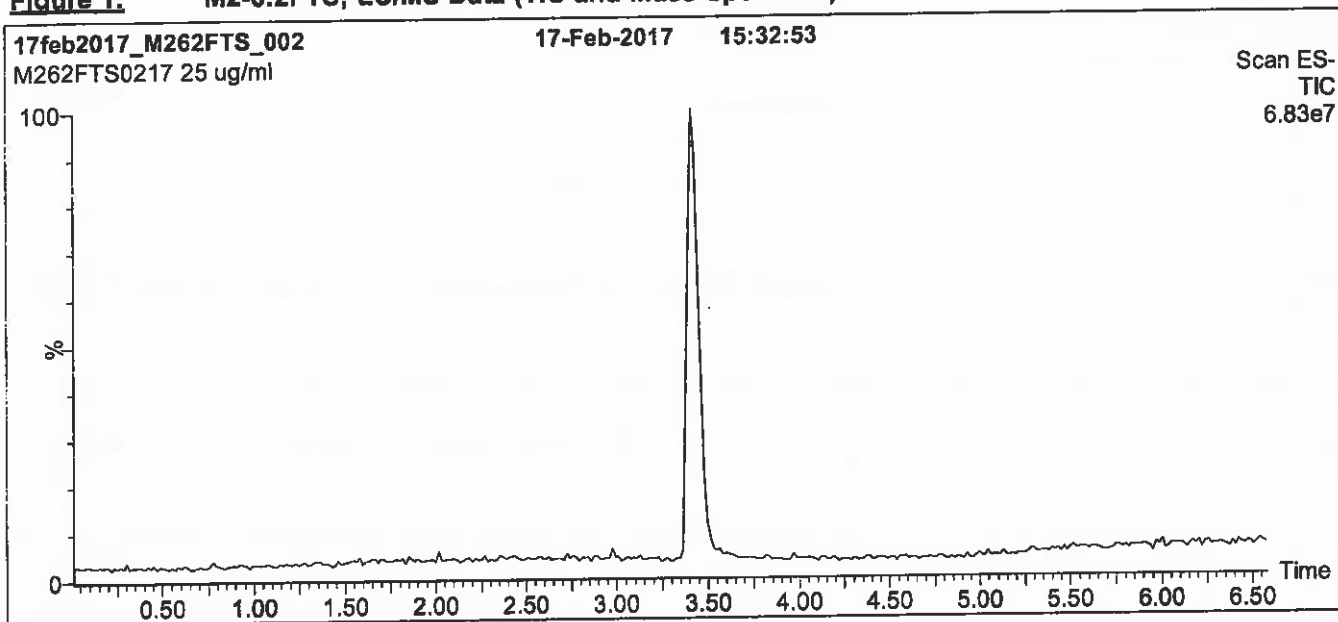
QUALITY MANAGEMENT:

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Figure 1: M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

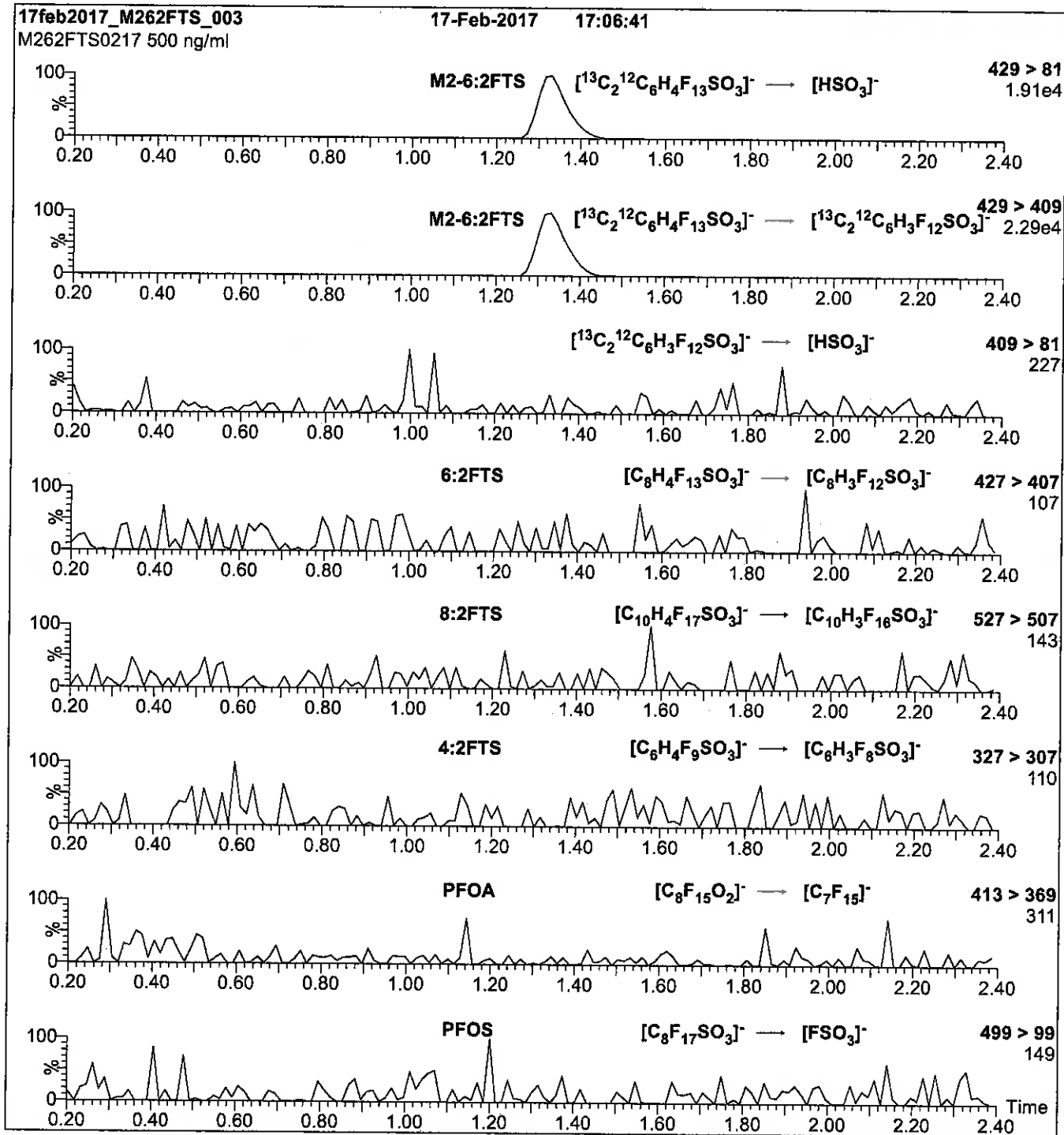
Column: Acquity UPLC BEH Shield RP_{1e},
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

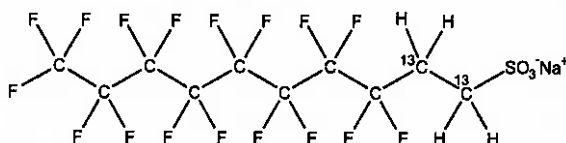
MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

Reagent

LCM2-8:2FTS_00002

R: 7/6/16 CBW

671602
ID: LCM2-8:2FTS_00002
Exp: 01/08/21 Prod: CBW
M2-8:2FTS**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** M2-8:2FTS **LOT NUMBER:** M282FTS0116
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]decane sulfonate**STRUCTURE:** **CAS #:** Not available

| | | | |
|----------------------------------|---|--------------------------|--------------------------------------|
| MOLECULAR FORMULA: | ¹³ C ₂ ¹² C ₈ H ₄ F ₁₇ SO ₃ Na | MOLECULAR WEIGHT: | 552.15 |
| CONCENTRATION: | 50.0 ± 2.5 µg/ml (Na salt) | SOLVENT(S): | Methanol |
| | 47.9 ± 2.4 µg/ml (M2-8:2FTS anion) | ISOTOPIC PURITY: | ≥99% ¹³ C |
| CHEMICAL PURITY: | >98% | | (1,2- ¹³ C ₂) |
| LAST TESTED: (mm/dd/yyyy) | 01/08/2016 | | |
| EXPIRY DATE: (mm/dd/yyyy) | 01/08/2021 | | |
| RECOMMENDED STORAGE: | Refrigerate ampoule | | |

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim
Date: 01/18/2016
(mm/dd/yyyy)Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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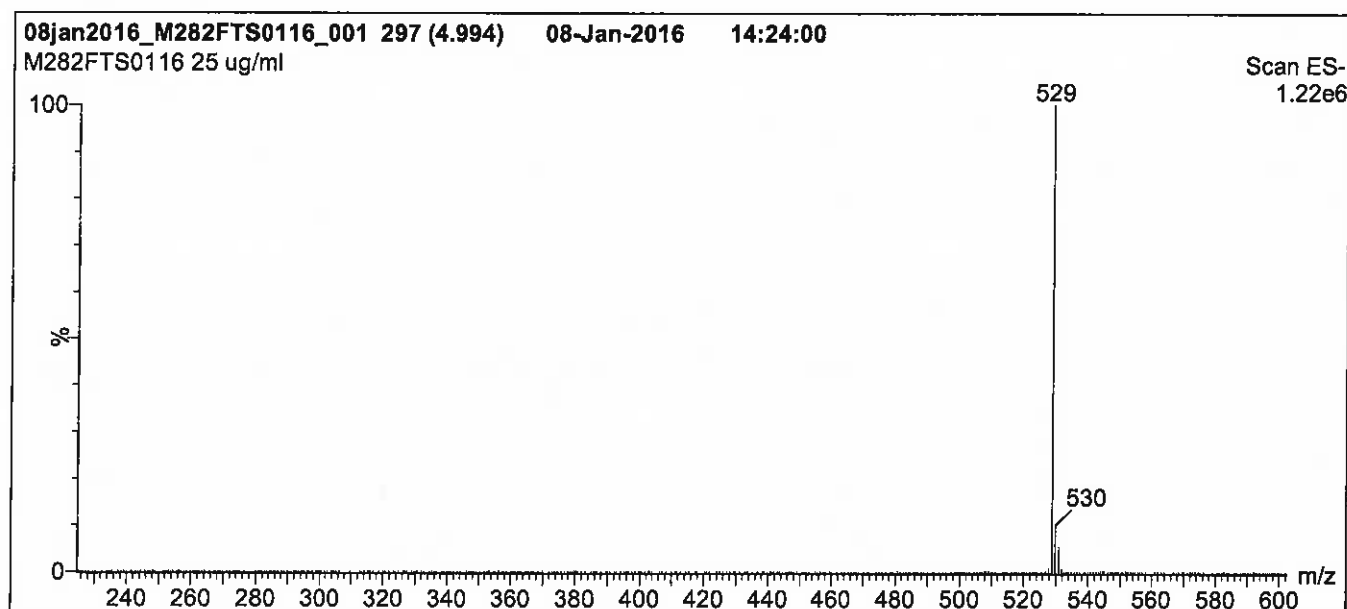
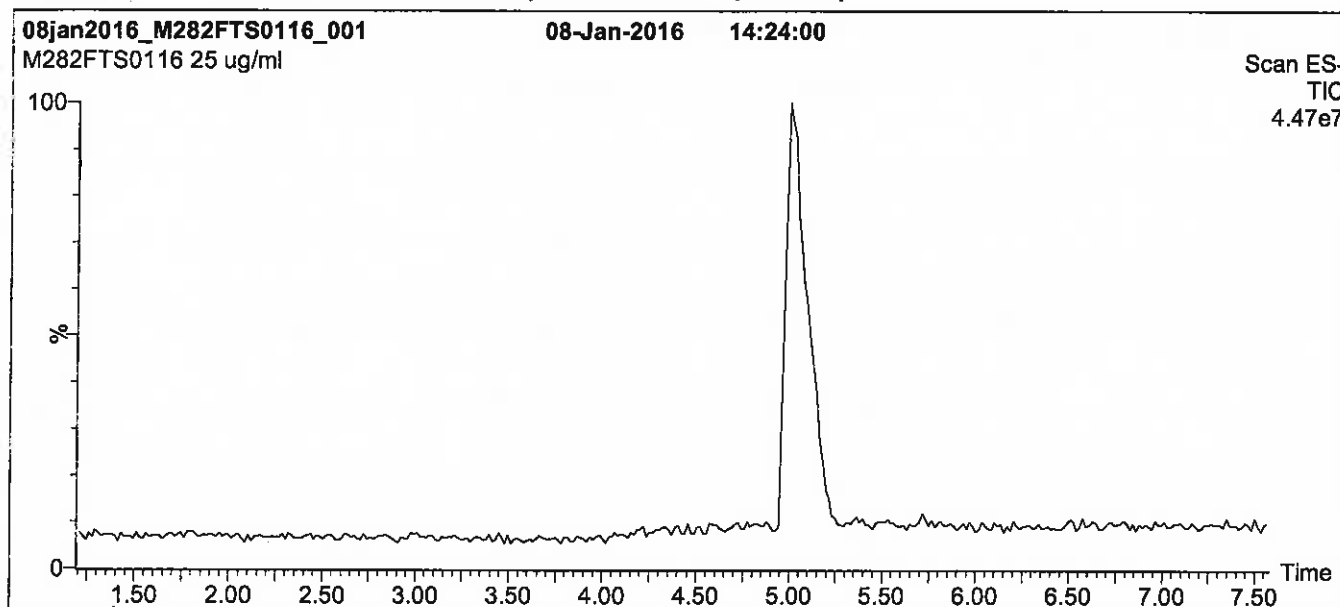
QUALITY MANAGEMENT:

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Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

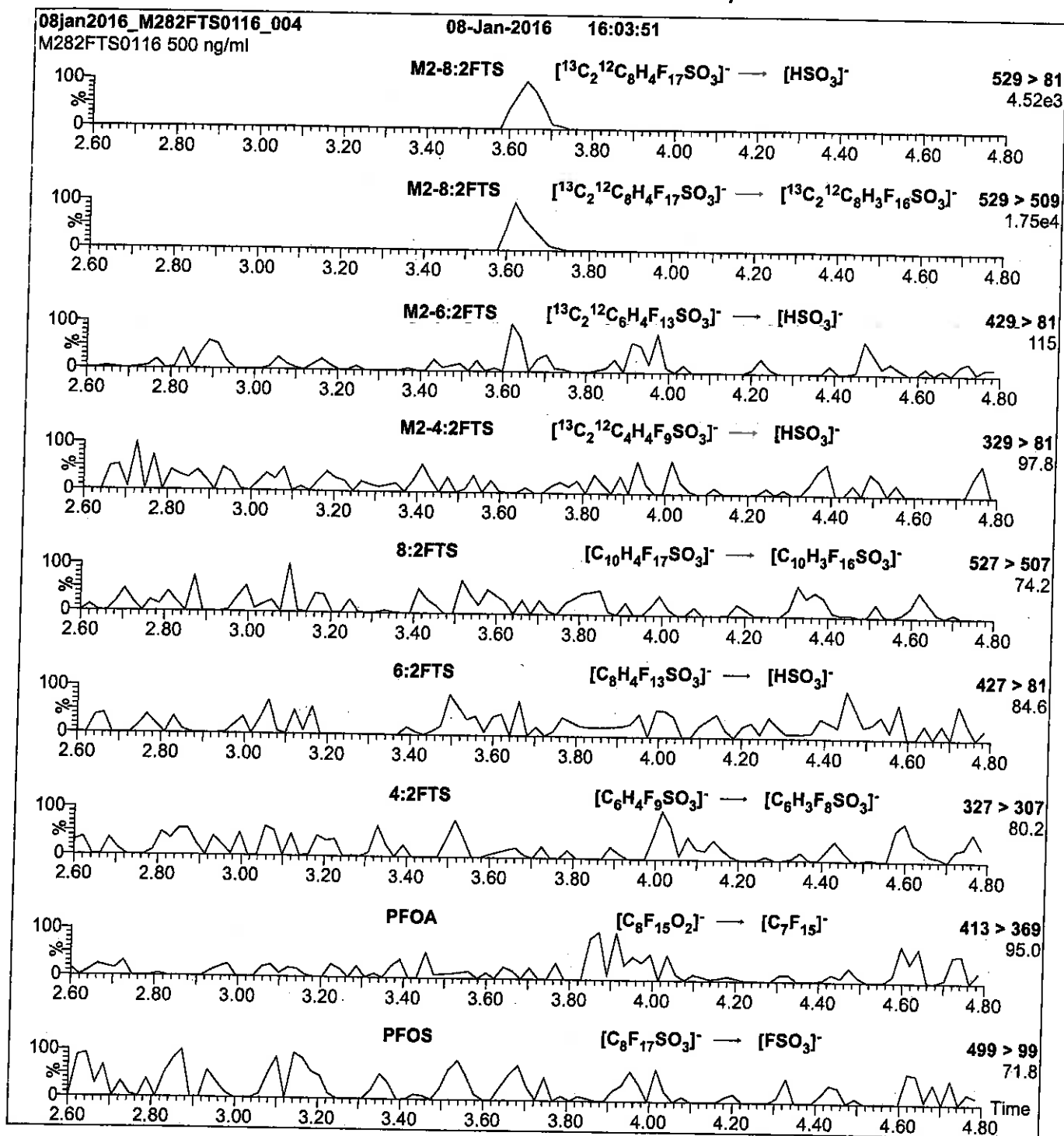
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.20\text{e-}3$
Collision Energy (eV) = 30

Reagent

LCM2-8:2FTS_00004

r: 3/2017 sev

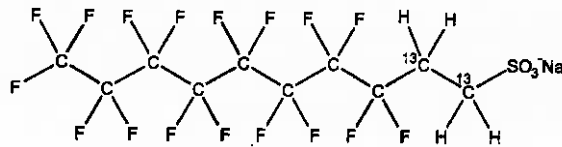


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0816
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈H₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 552.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.9 ± 2.4 µg/ml (M2-8:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 08/22/2016 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 08/22/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 09/02/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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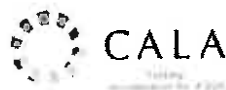
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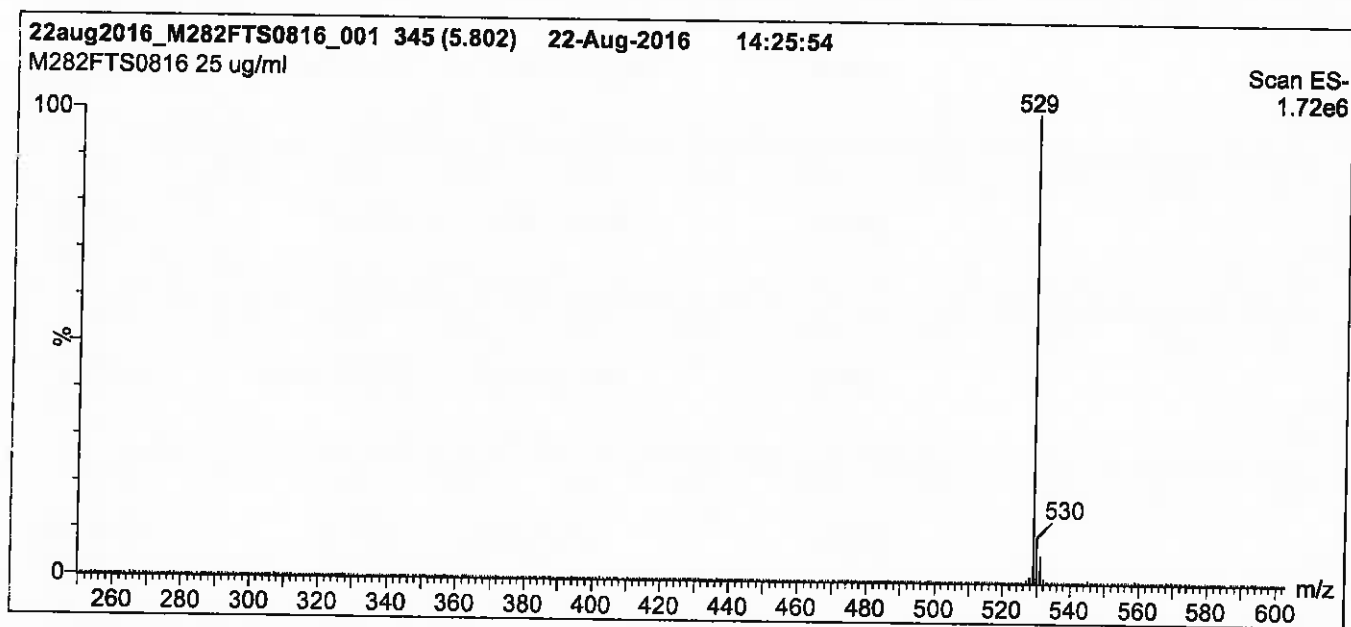
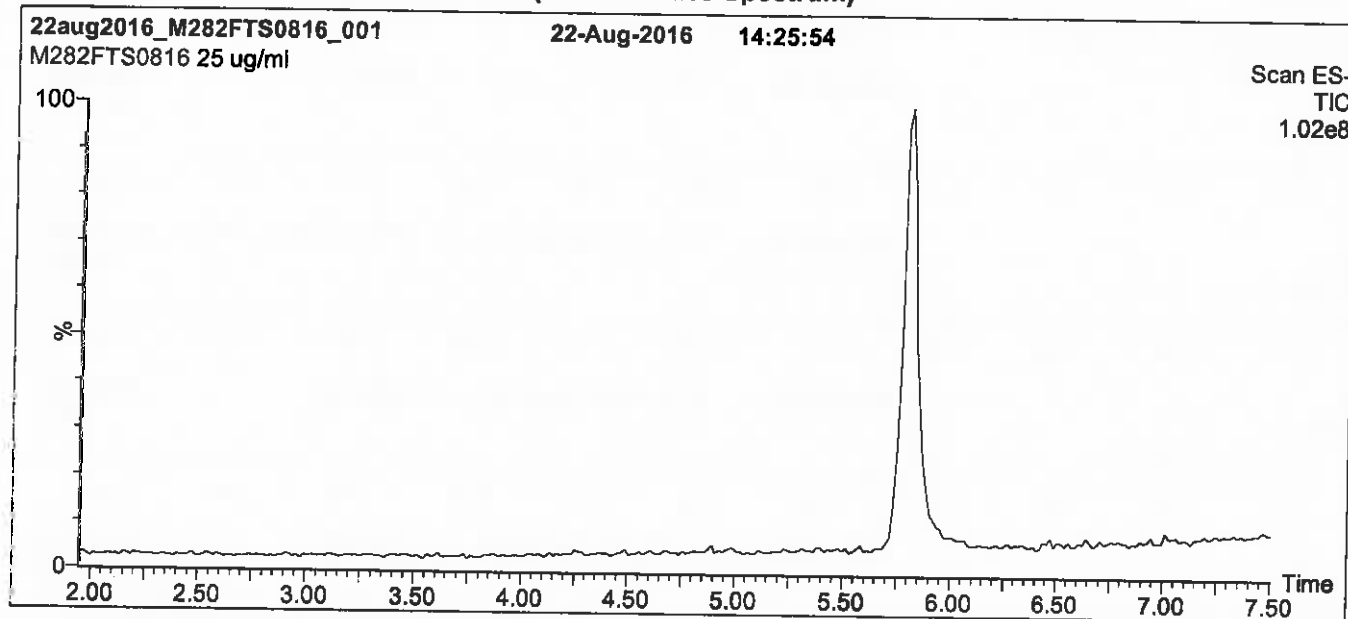
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Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Agilent Zorbax Bonus-RP
1.8 μ m, 2.1 x 100 mm

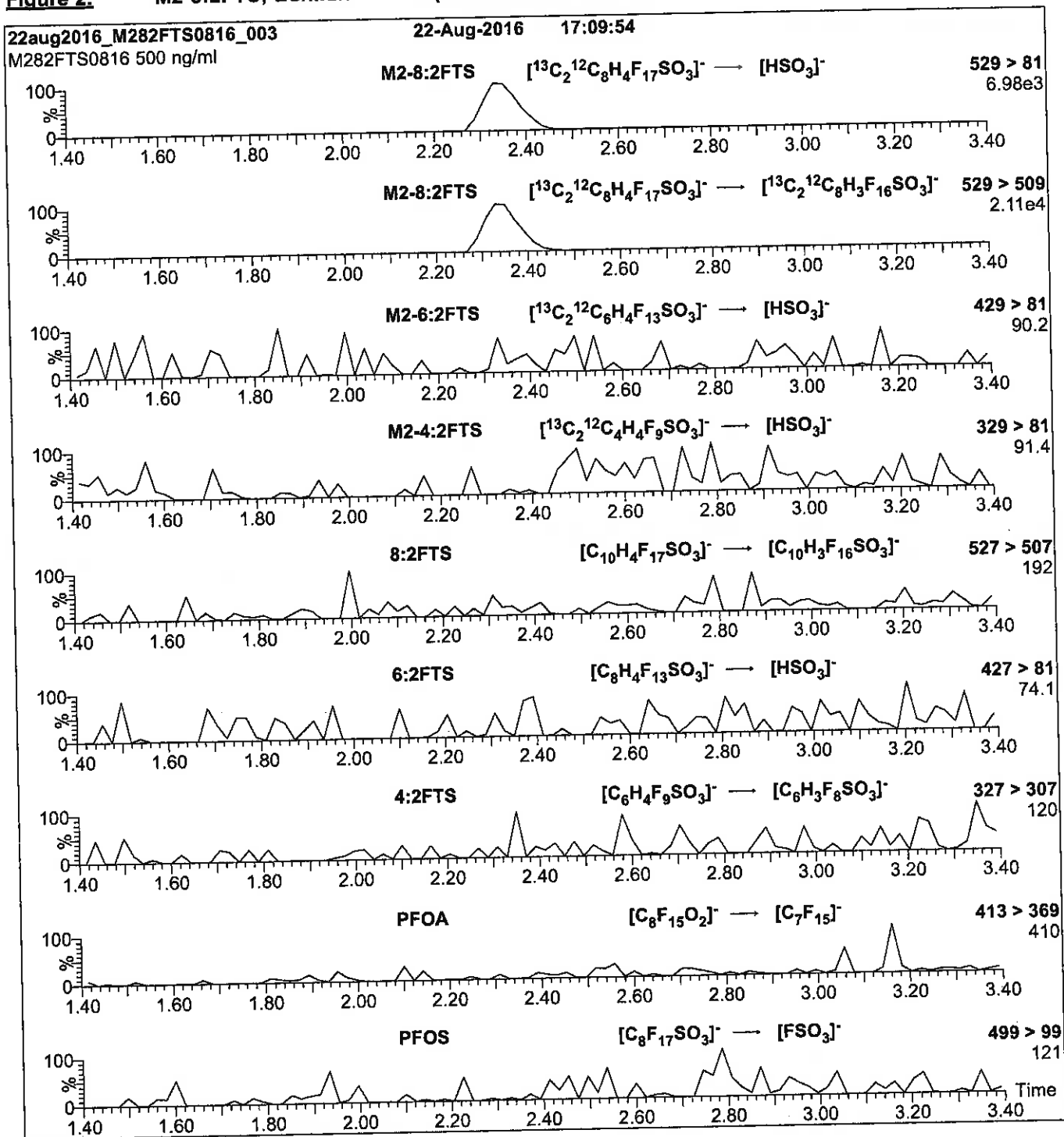
Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 µl (500 ng/ml M2-8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
 Collision Energy (eV) = 30

Reagent

LCM2PFHxDA_00009

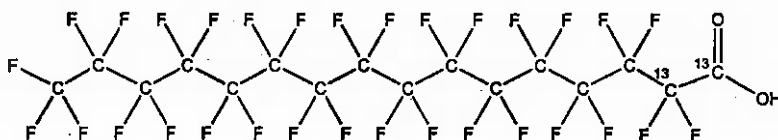


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA1112
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid

STRUCTURE: **CAS #:** Not available



| | | | |
|----------------------------------|--|--------------------------|--|
| MOLECULAR FORMULA: | ¹³ C ₂ ¹² C ₁₄ HF ₃₁ O ₂ | MOLECULAR WEIGHT: | 816.11 |
| CONCENTRATION: | 50 ± 2.5 µg/ml | SOLVENT(S): | Methanol Water (<1%) |
| CHEMICAL PURITY: | >98% | ISOTOPIC PURITY: | ≥99% ¹³ C (1,2- ¹³ C ₂) |
| LAST TESTED: (mm/dd/yyyy) | 01/07/2016 | | |
| EXPIRY DATE: (mm/dd/yyyy) | 01/07/2021 | | |
| RECOMMENDED STORAGE: | Store ampoule in a cool, dark place | | |

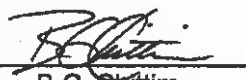
DOCUMENTATION/ DATA ATTACHED:

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ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

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Certified By:  **Date:** 01/11/2016
 B.G. Chittim (mm/dd/yyyy)

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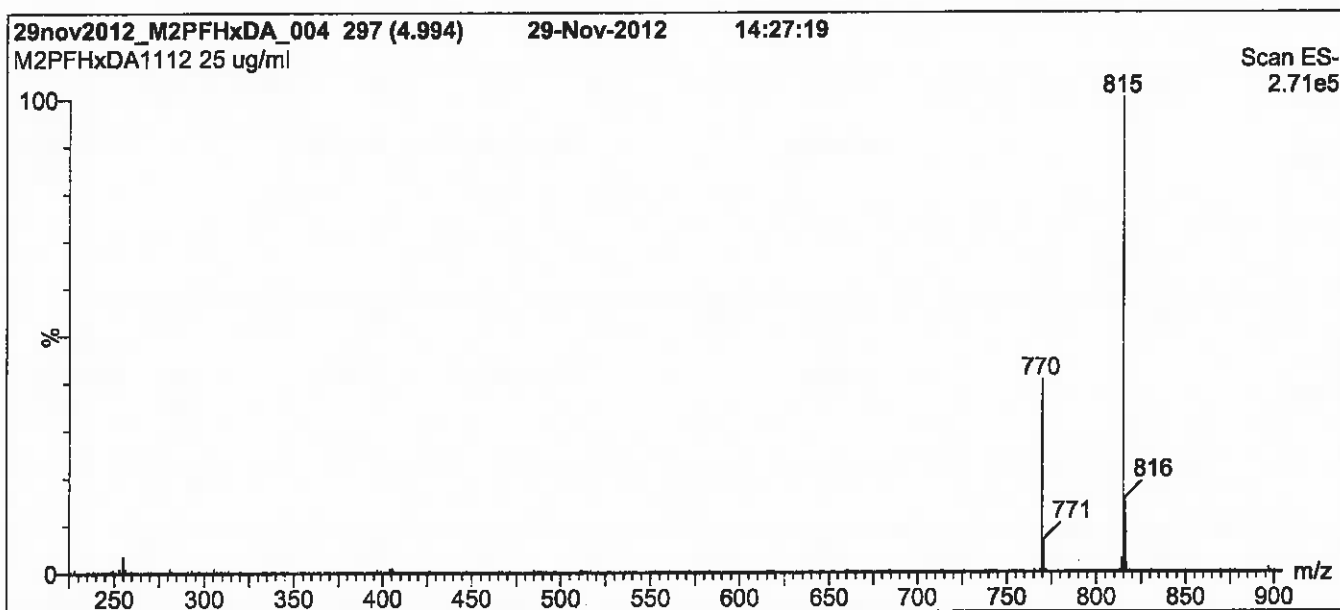
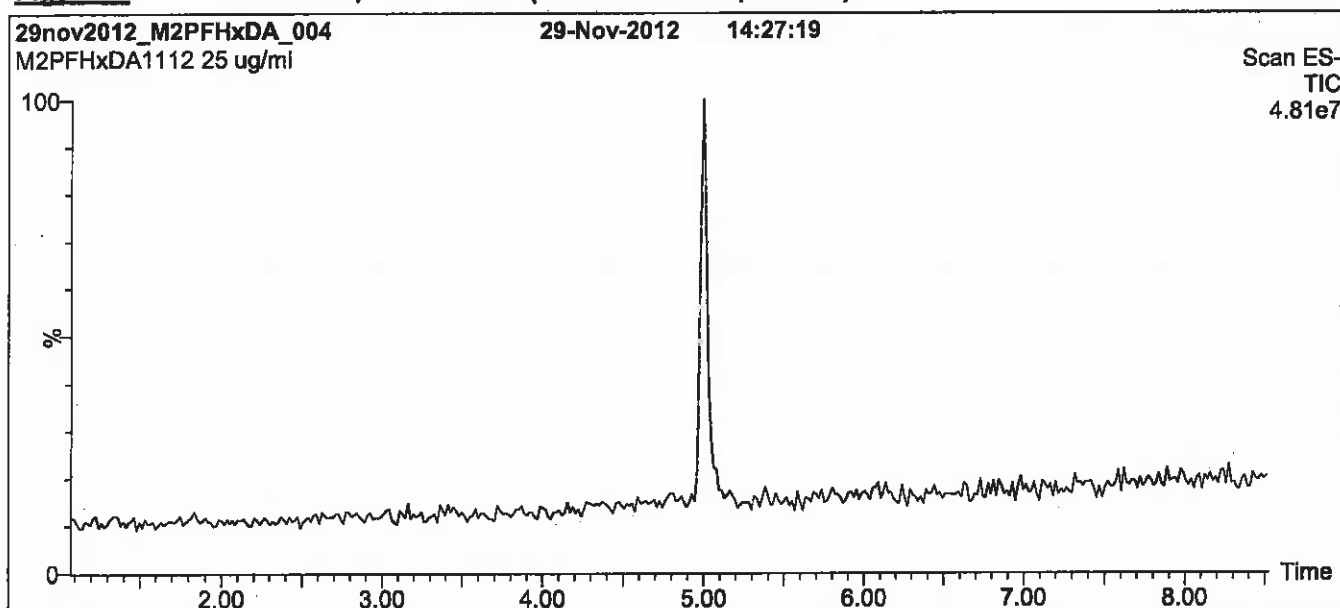
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 100% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

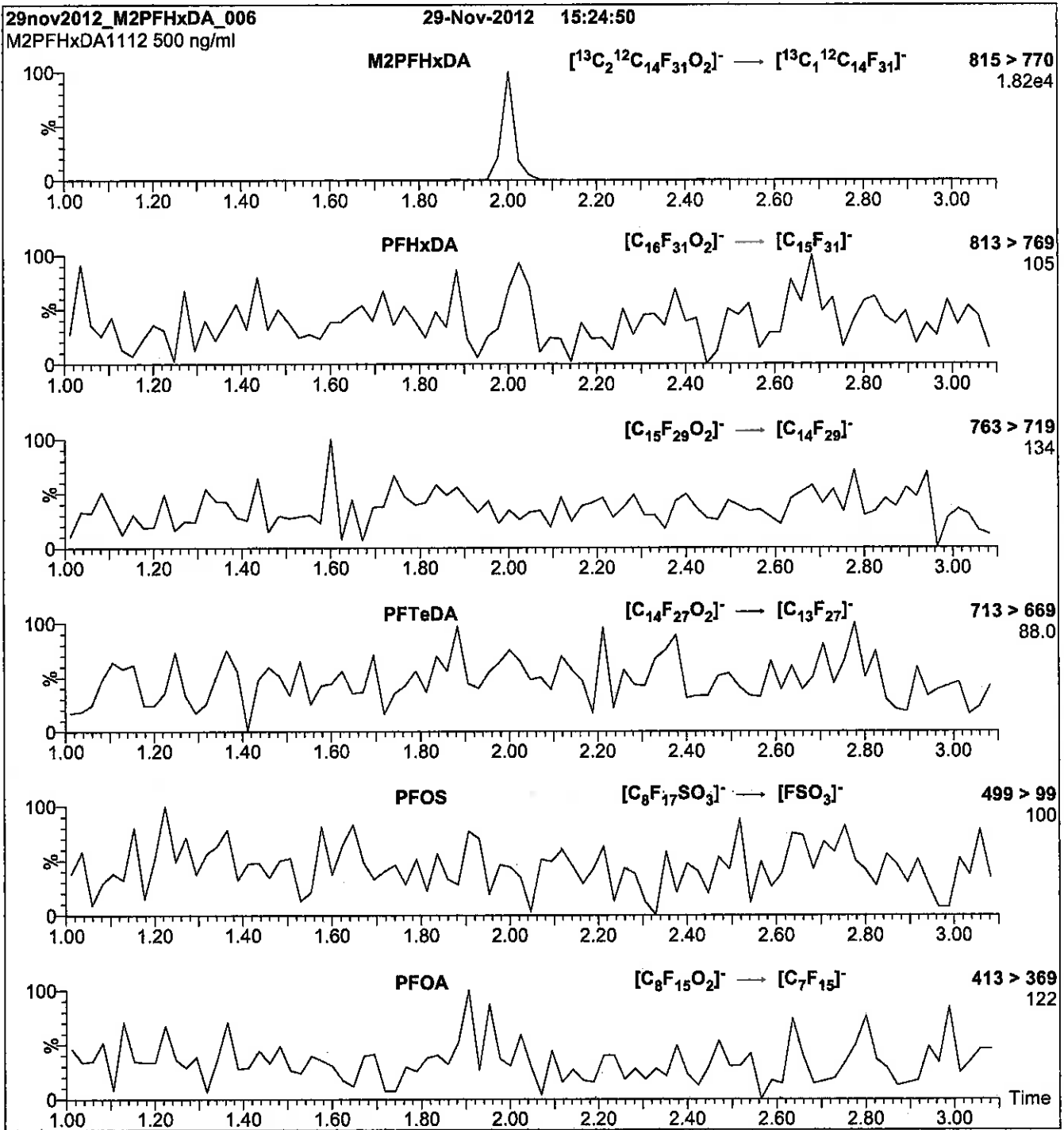
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 25.00
 Cone Gas Flow (l/hr) = 60
 Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCM2PFHxDA_00010

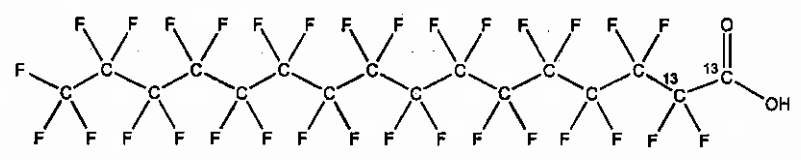
n: 5/3/17 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA1112
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₄HF₃₁O₂ **MOLECULAR WEIGHT:** 816.11
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 01/07/2016
EXPIRY DATE: (mm/dd/yyyy) 01/07/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  Date: 01/11/2016
 B.G. Chittim (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

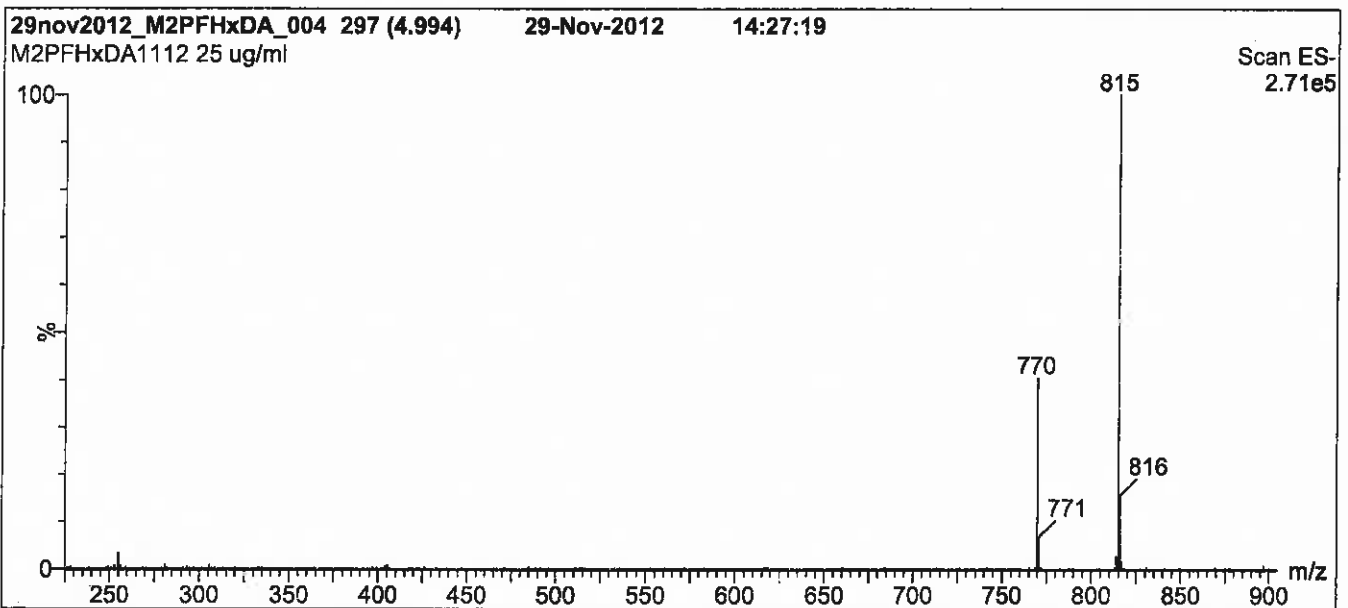
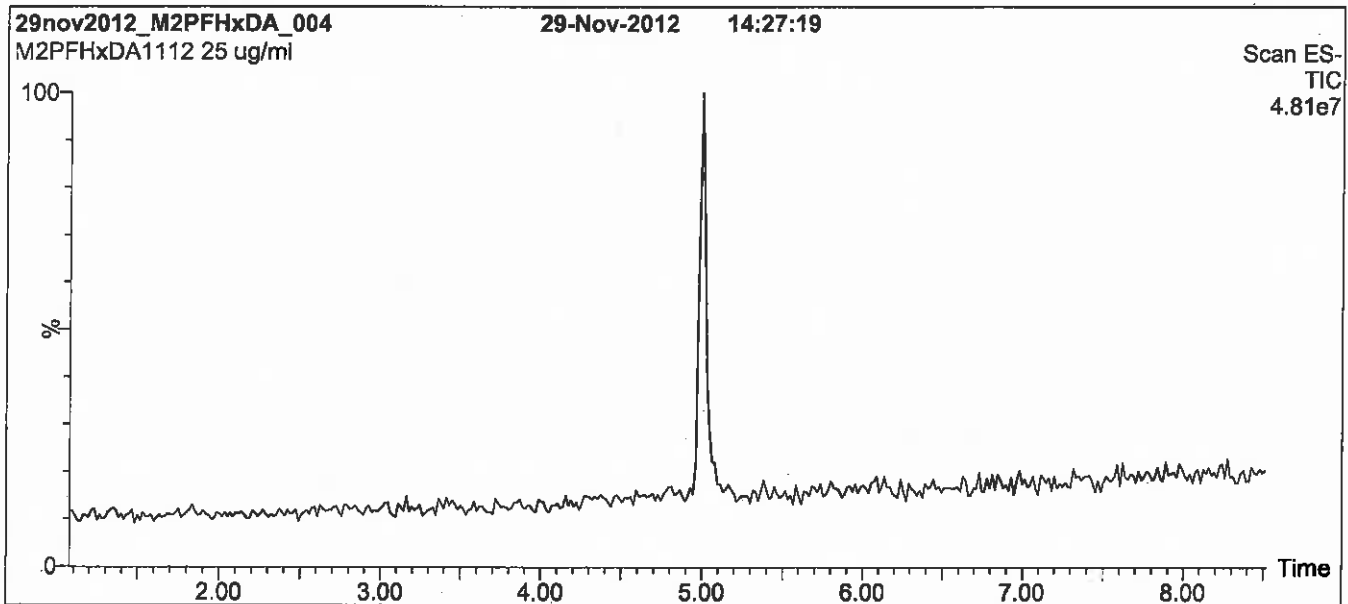
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 100% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

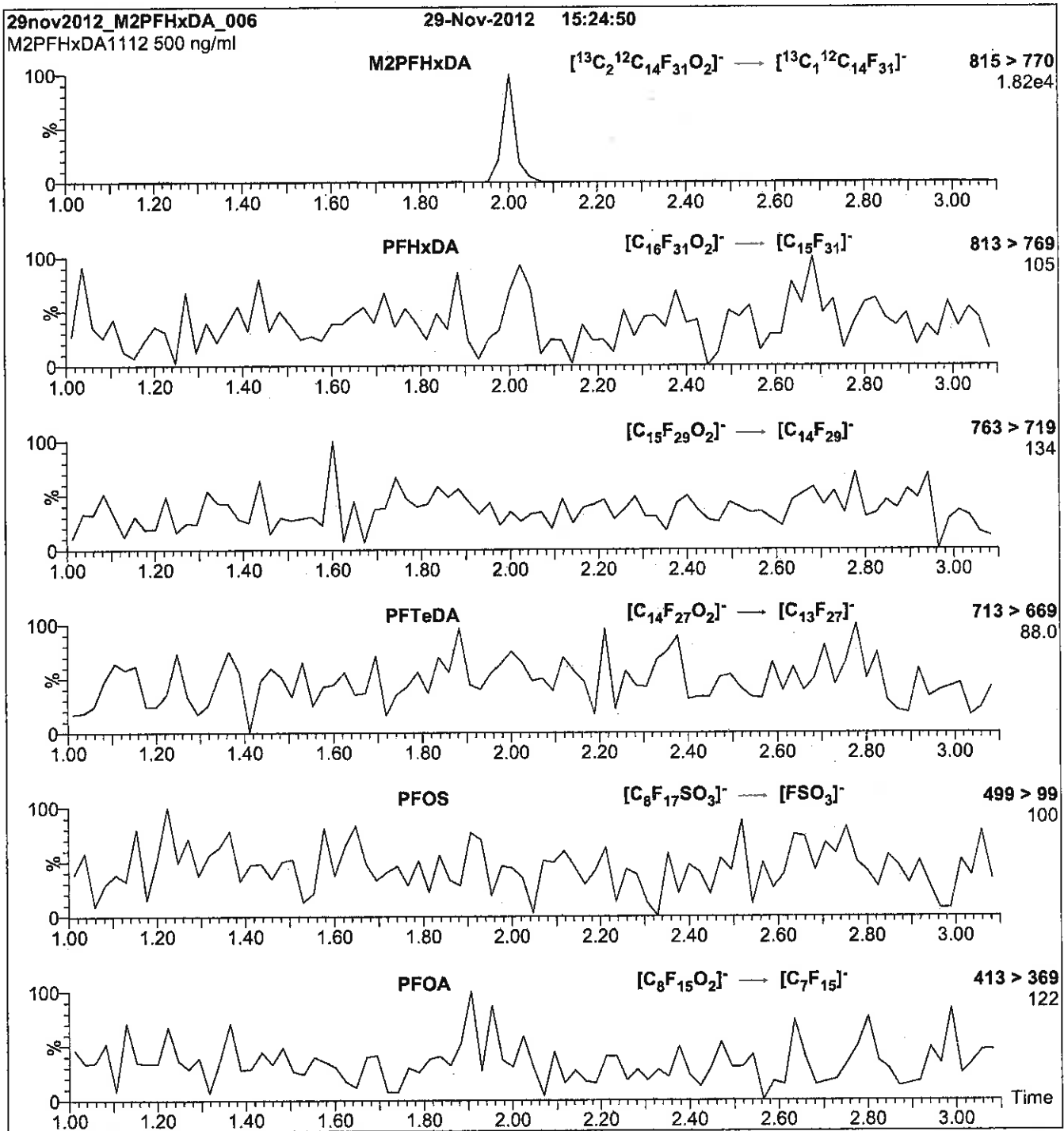
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV): 2.00
Cone Voltage (V): 25.00
Cone Gas Flow (l/hr): 60
Desolvation Gas Flow (l/hr): 750

Figure 2: M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

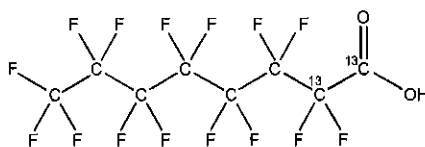
LCM2PFOA_00005



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA **LOT NUMBER:** M2PFOA0613
COMPOUND: Perfluoro-n-[1,2-¹³C₂]octanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₁₅F₁₅O₂ **MOLECULAR WEIGHT:** 416.05
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99%¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____


B.G. Chittim

Date: 07/16/2013
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Material Safety Data Sheets (MSDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product, unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, x-ray crystallography and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS and/or LC/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration for the period of time specified by the expiry date in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

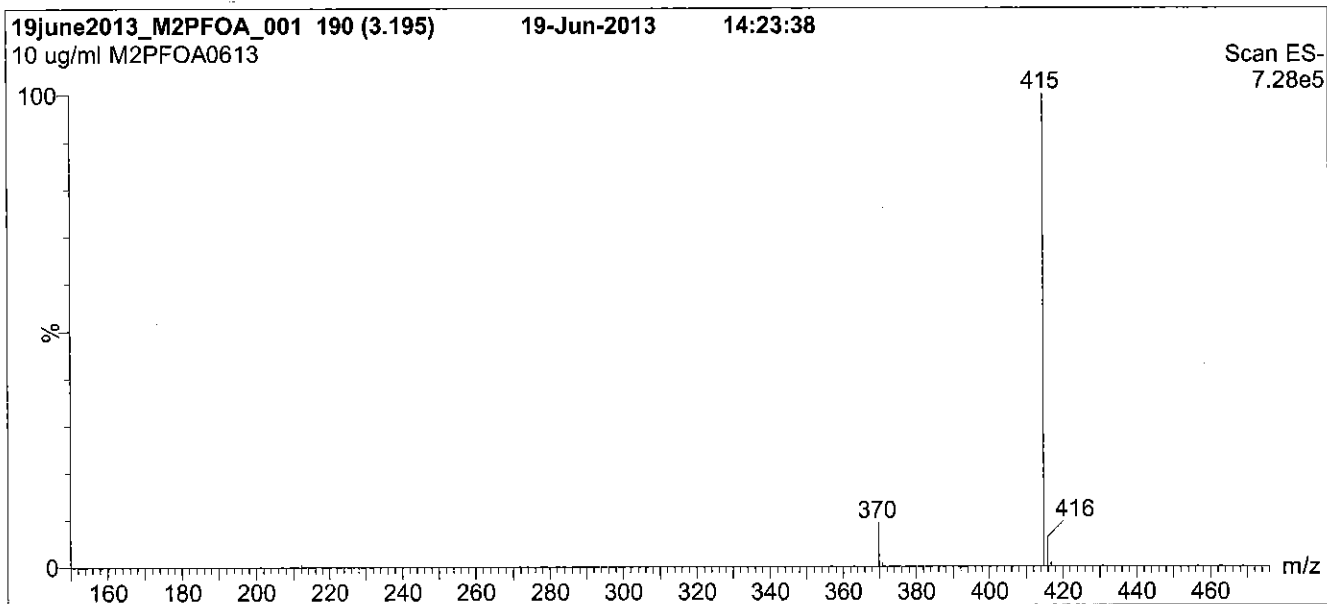
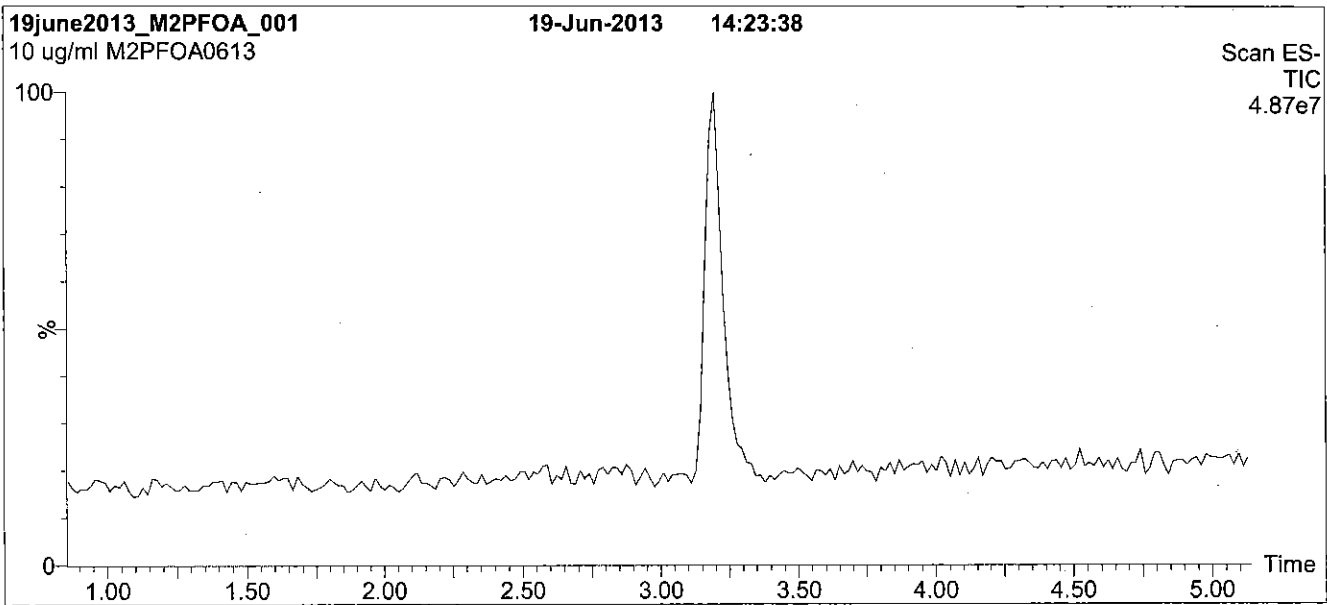
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: M2PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

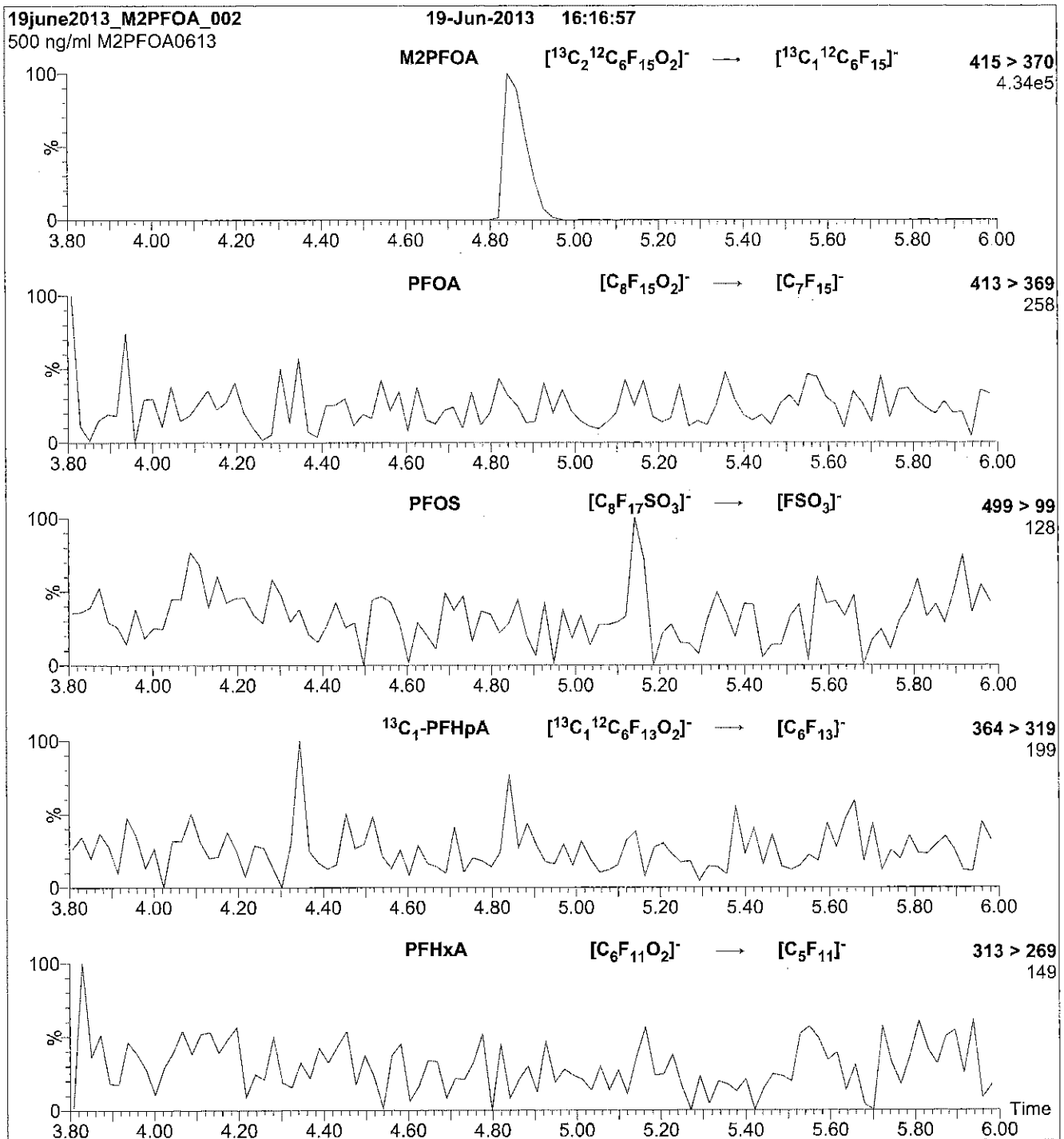
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 11

Reagent

LCM2PFOA_00006

R: SBC 12/21/16



814260

ID: LCM2PFOA_00006

Exp: 02/12/21 Prod: SBC

¹³C2-PFOA Stock 50ug/mL



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

M2PFOA

LOT NUMBER:

M2PFOA0216

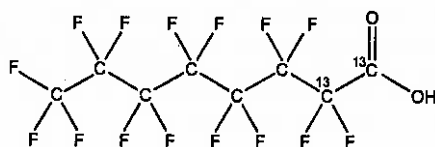
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]octanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₆HF₁₆O₂

MOLECULAR WEIGHT:

416.05

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99%¹³C

LAST TESTED: (mm/dd/yyyy)

02/12/2016

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

02/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/24/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

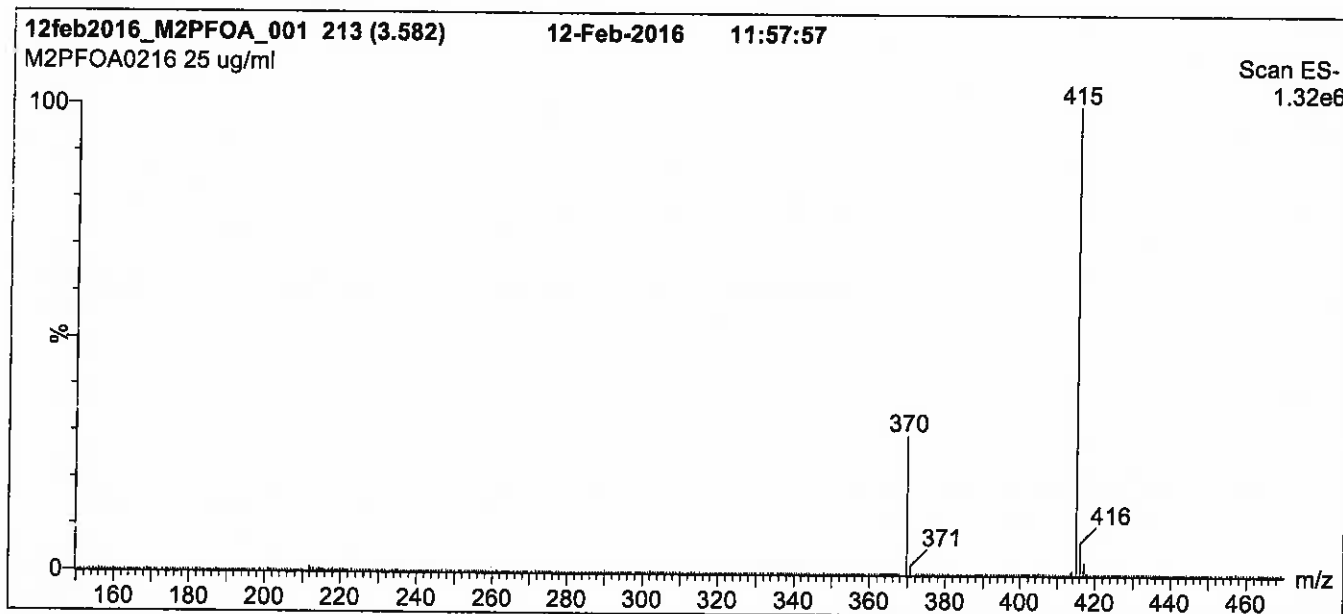
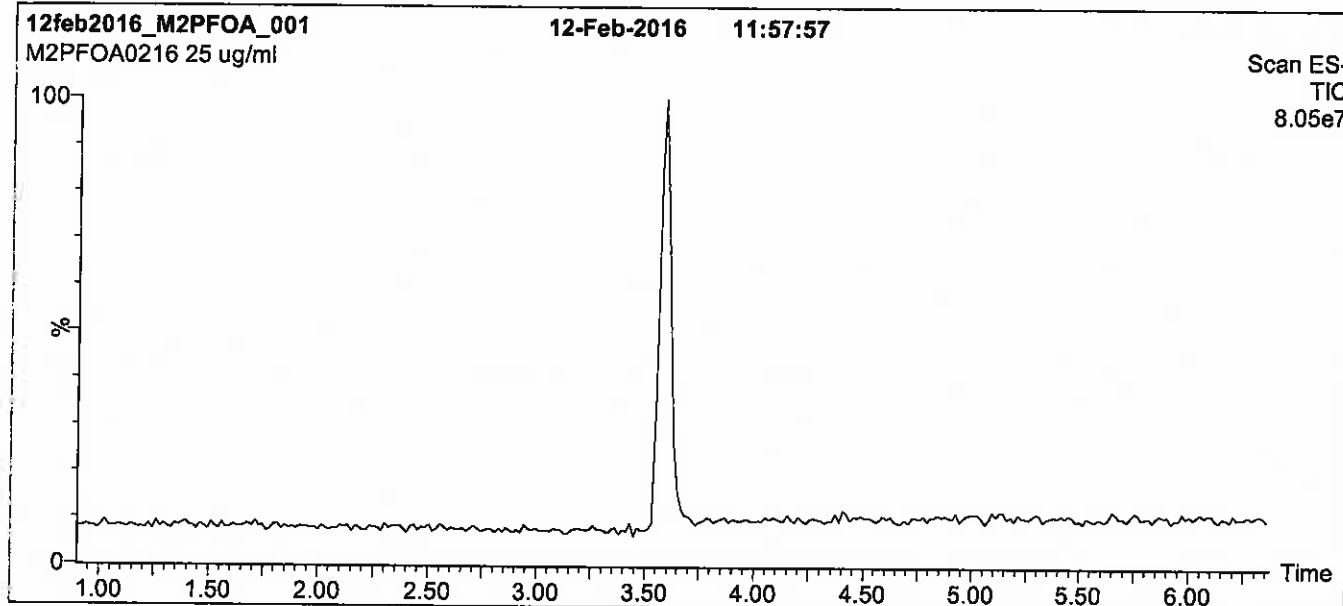
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M2PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

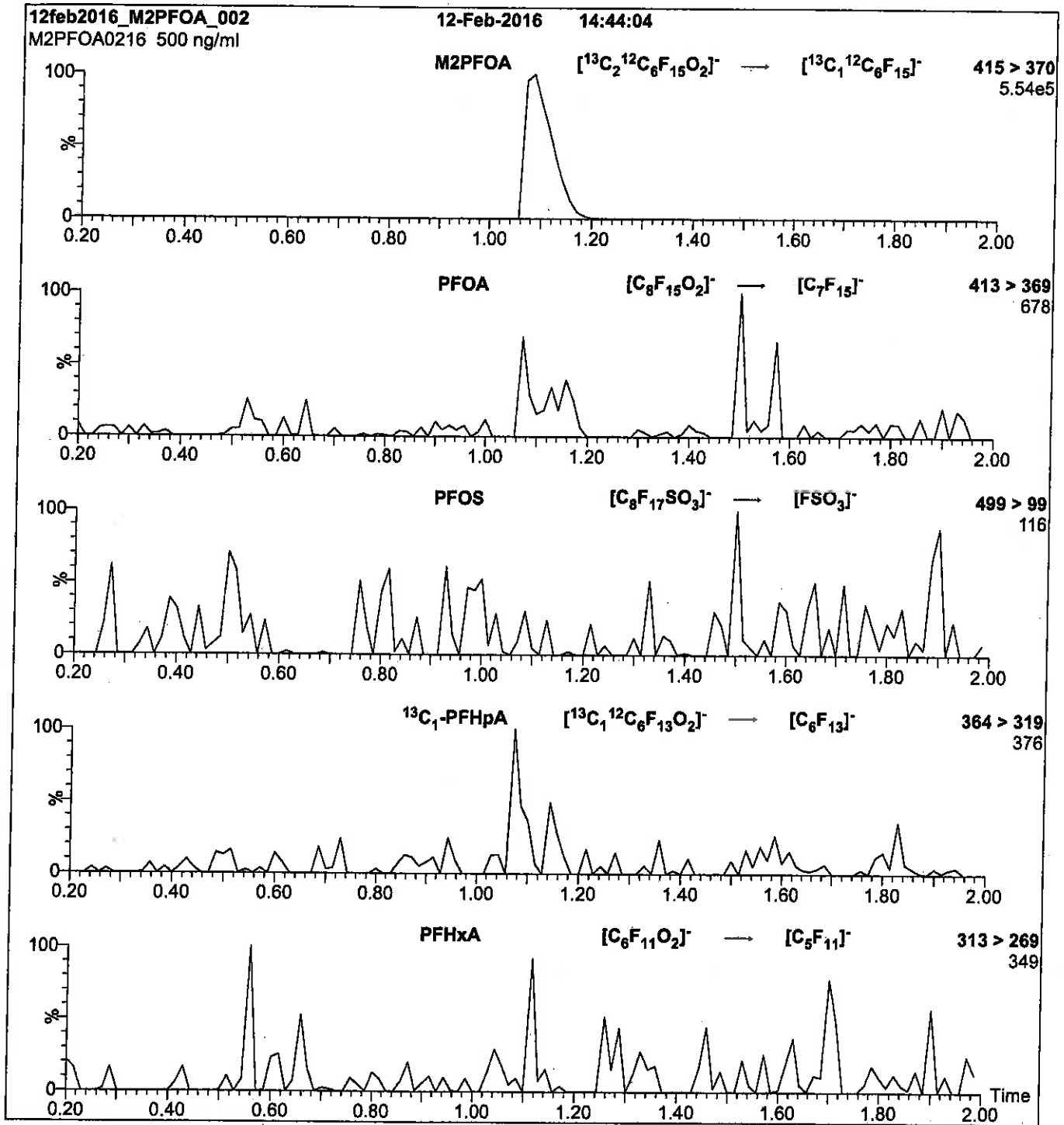
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

Reagent

LCM2PFTeDA_00008

r: 3k/17 sev

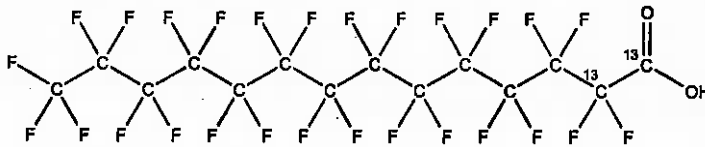


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA **LOT NUMBER:** M2PFTeDA1115
COMPOUND: Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₂HF₂₇O₂ **MOLECULAR WEIGHT:** 716.10
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 12/07/2015
EXPIRY DATE: (mm/dd/yyyy) 12/07/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

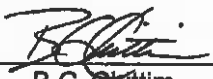
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 12/08/2015
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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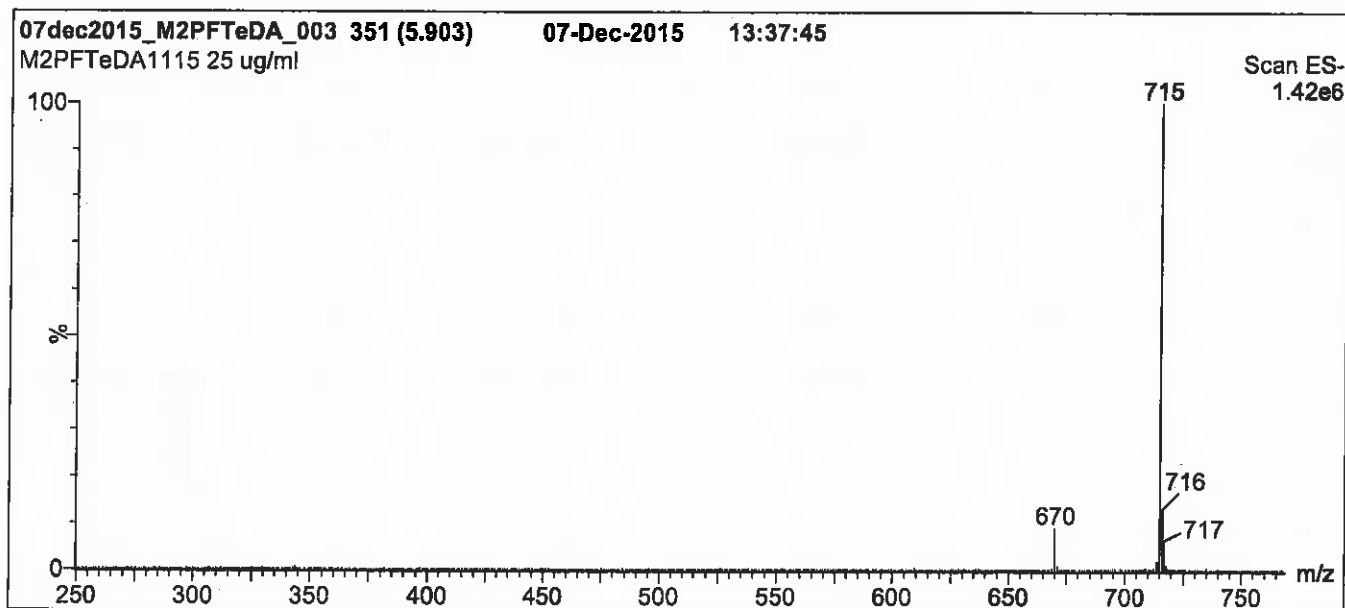
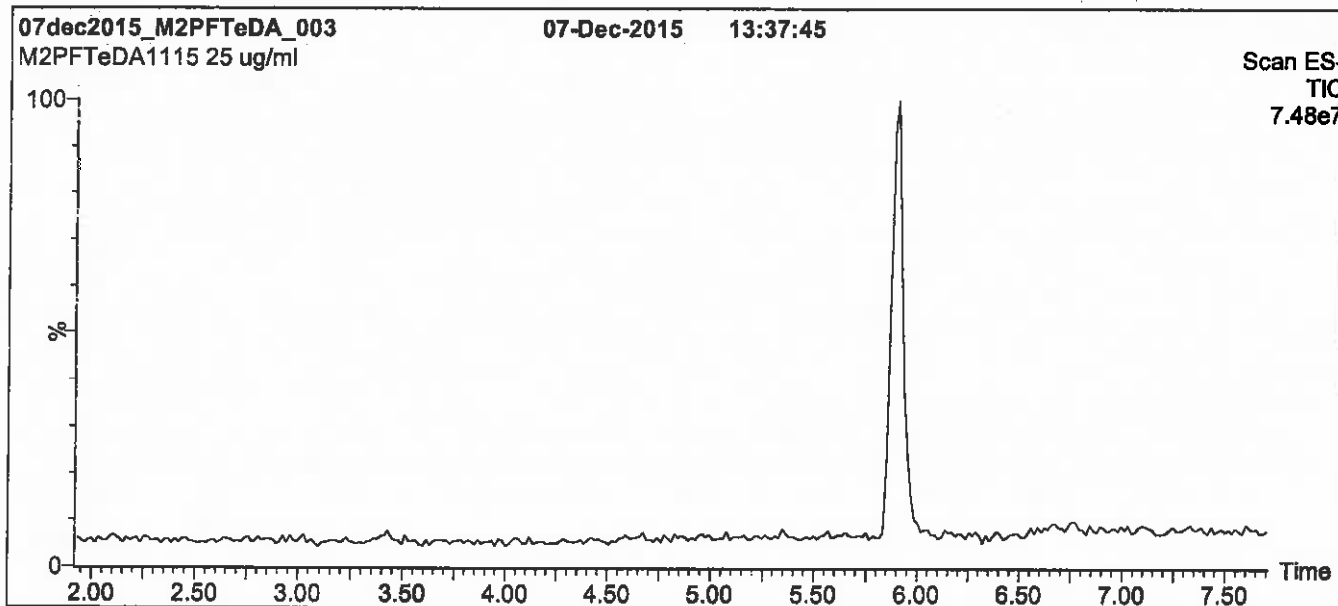
QUALITY MANAGEMENT:

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Figure 1: M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 80% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

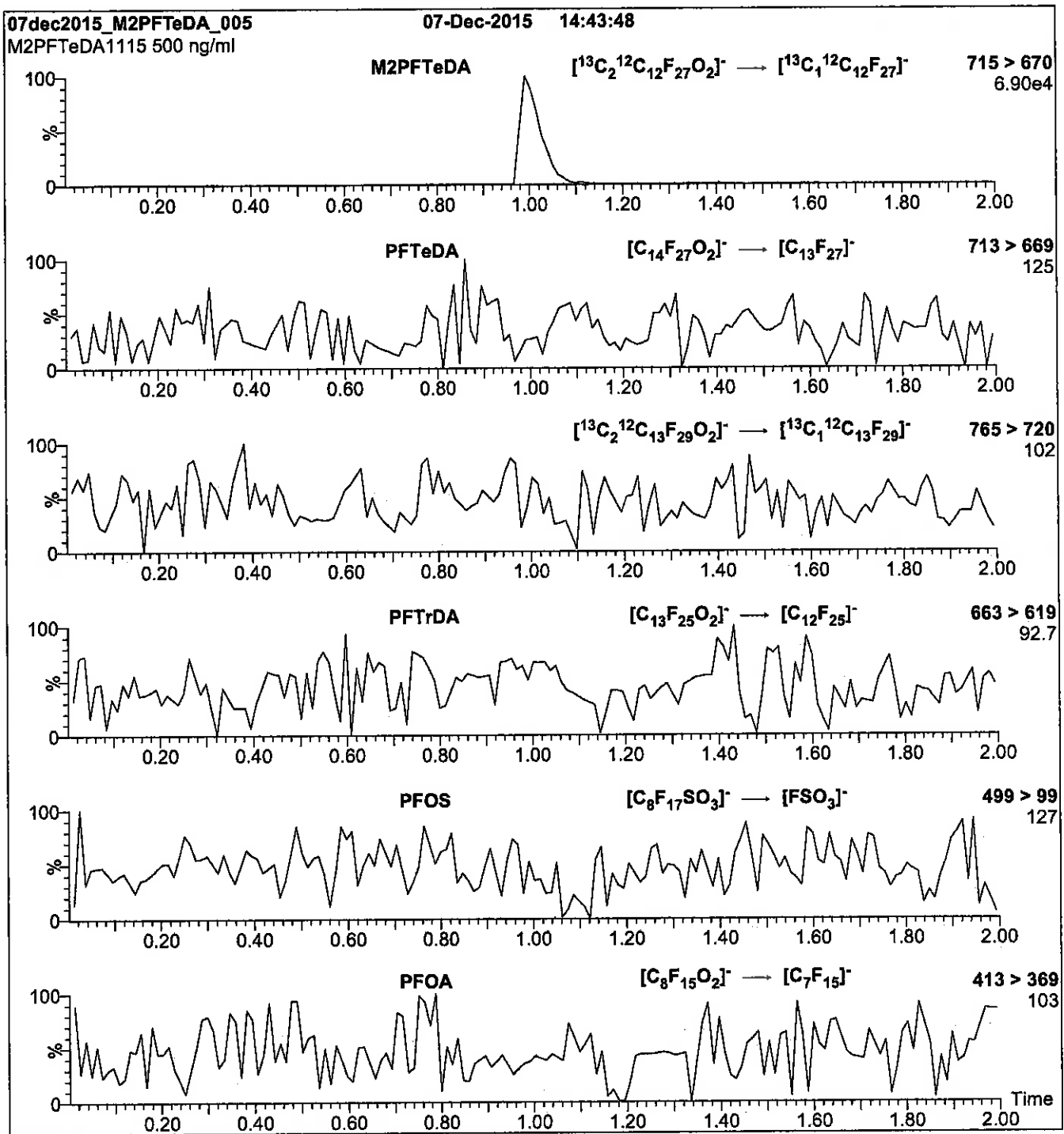
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

injection: Direct loop injection
10 μl (500 ng/ml M2PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 14

Reagent

LCM2PFTeDA_00009

R: S/317 SW

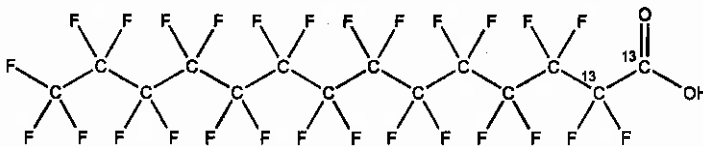


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA **LOT NUMBER:** M2PFTeDA0217
COMPOUND: Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}\text{C}_2^{12}\text{C}_{12}\text{HF}_{27}\text{O}_2$ **MOLECULAR WEIGHT:** 716.10
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** $\geq 99\% \text{ }^{13}\text{C}$
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 03/01/2017
EXPIRY DATE: (mm/dd/yyyy) 03/01/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager **Date:** 03/07/2017
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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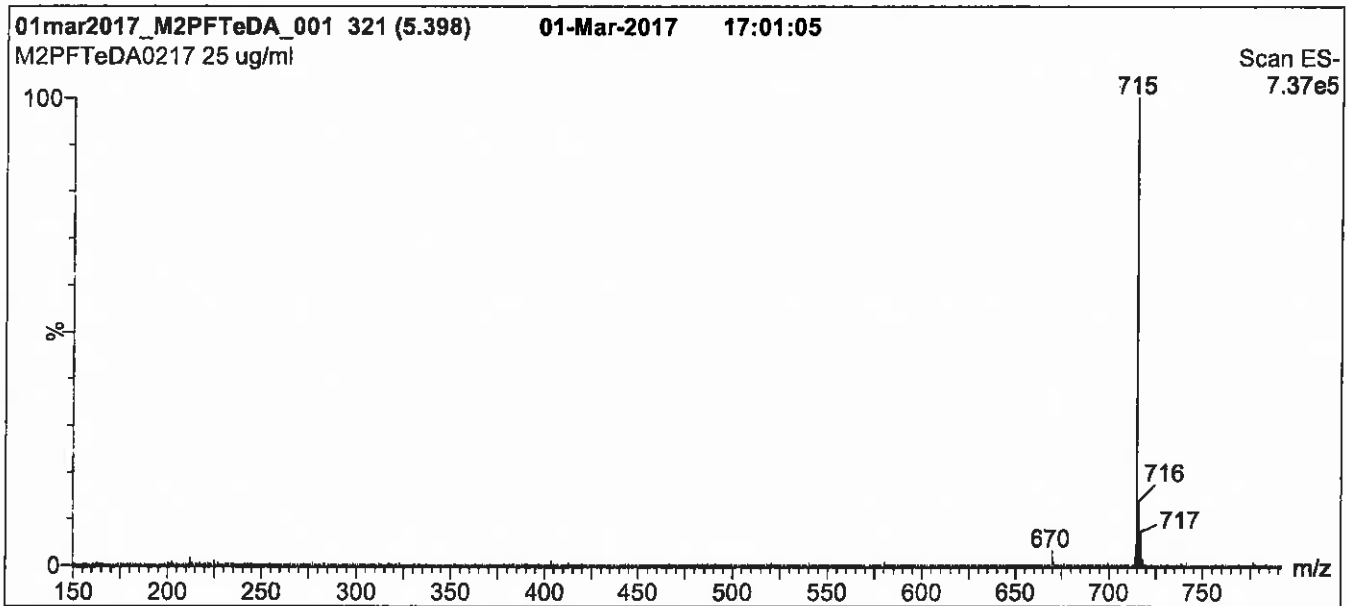
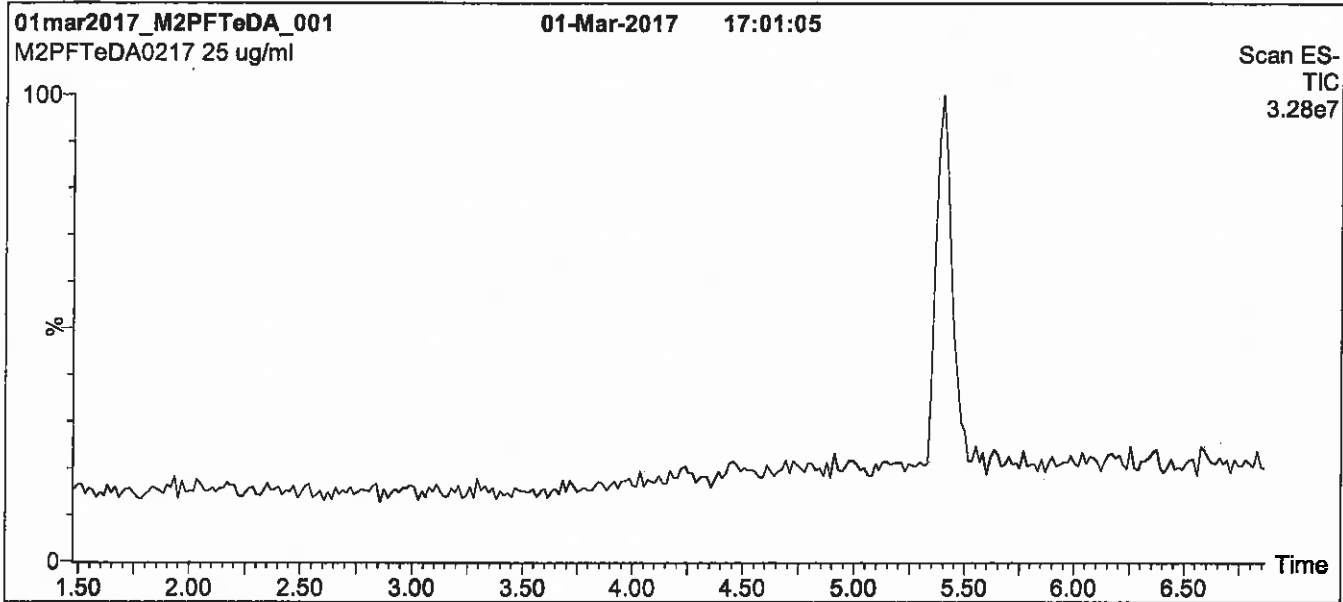
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MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

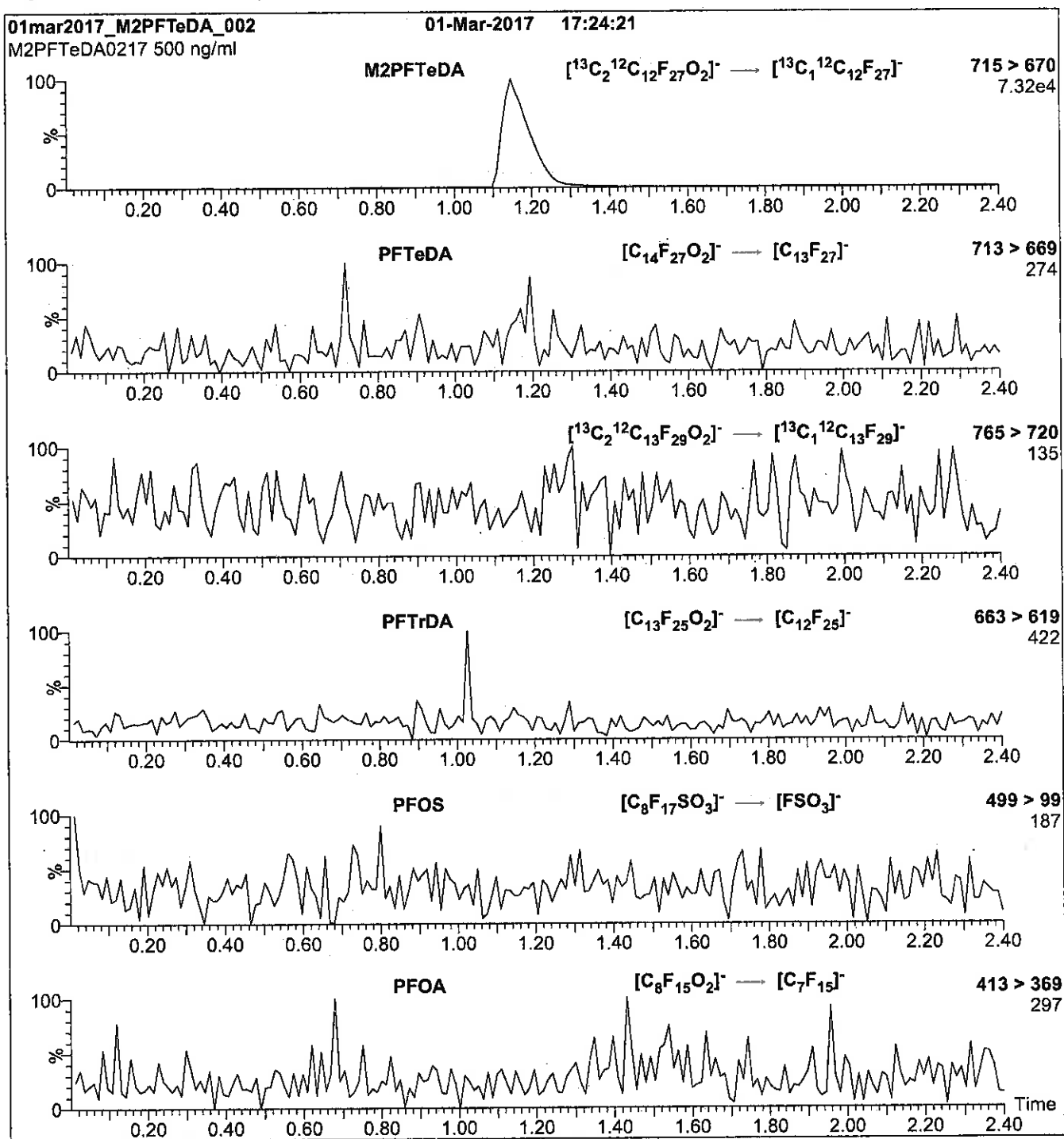
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00008

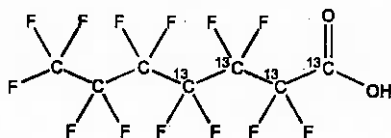


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA **LOT NUMBER:** M4PFHpA0516
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]heptanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₃HF₁₃O₂ **MOLECULAR WEIGHT:** 368.03
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99%¹³C
 (1,2,3,4-¹³C₄)
LAST TESTED: (mm/dd/yyyy) 05/27/2016
EXPIRY DATE: (mm/dd/yyyy) 05/27/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim

Date: 07/05/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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EXPIRY DATE / PERIOD OF VALIDITY:

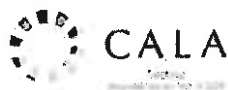
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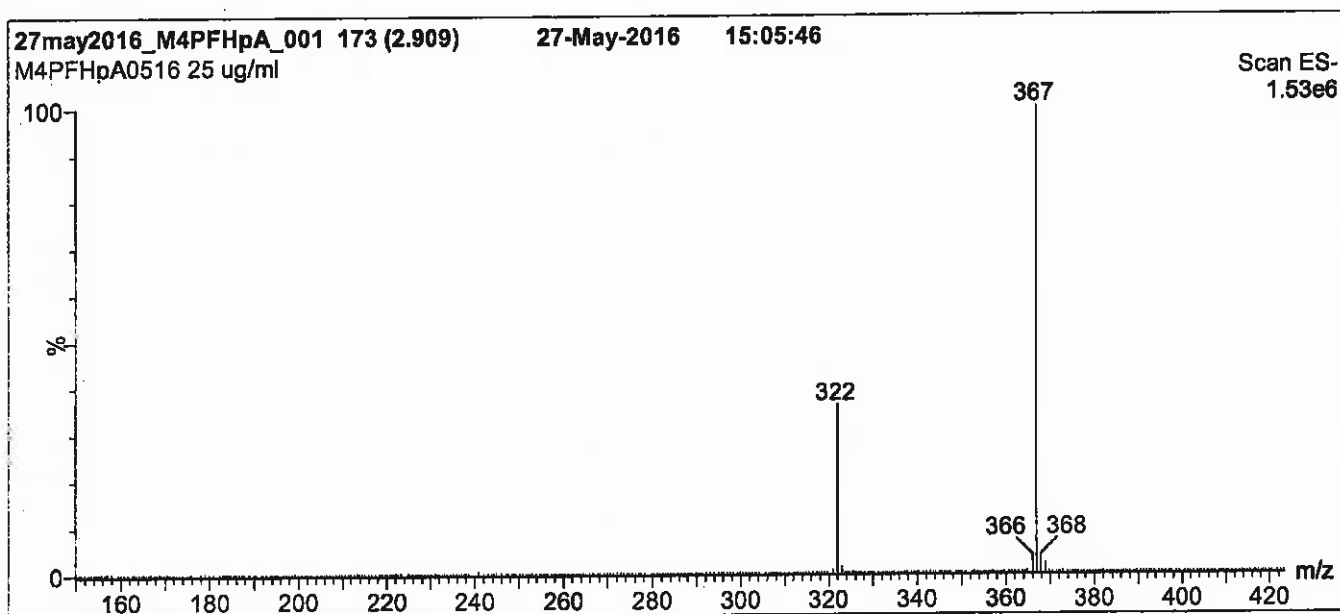
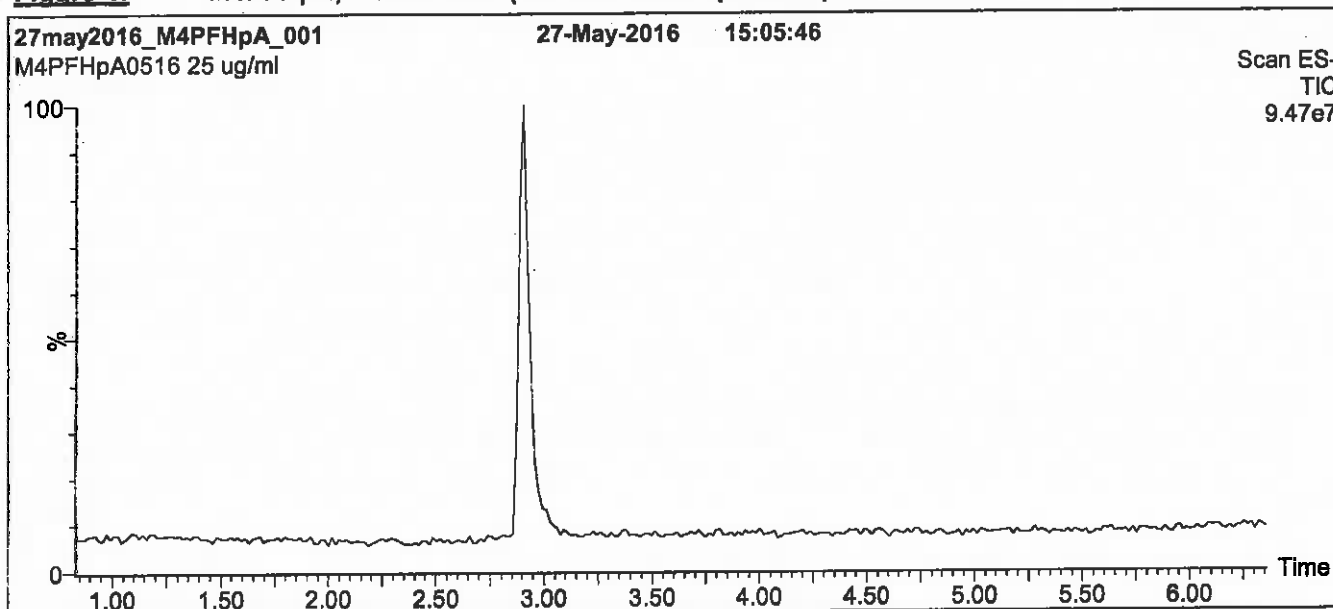
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Figure 1: M4PFHpA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

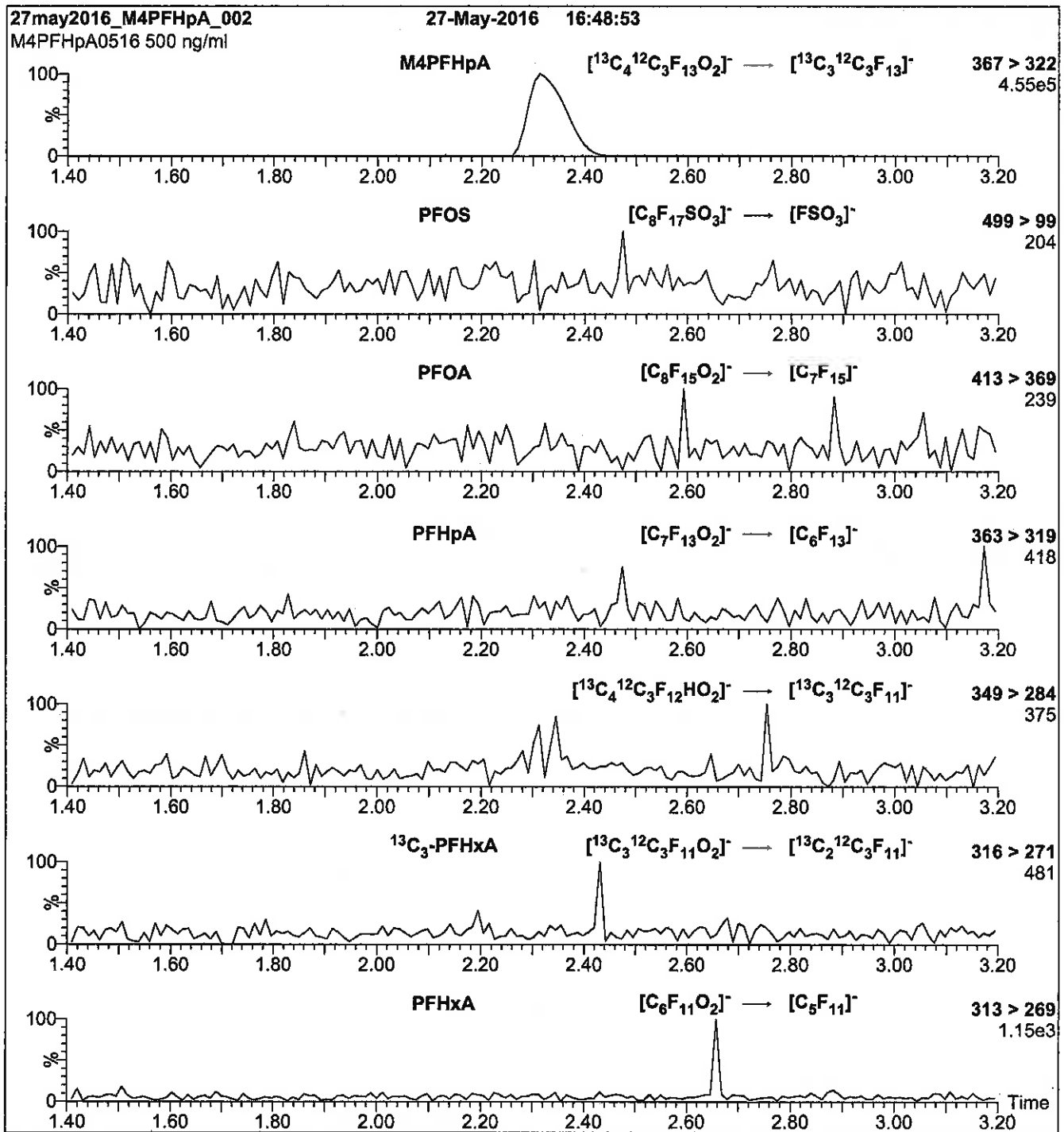
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M4PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 11

Reagent

LCM4PFHPA_00009

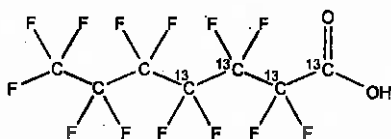
r: 5/3/17 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA **LOT NUMBER:** M4PFHpA0516
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]heptanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₃HF₁₃O₂ **MOLECULAR WEIGHT:** 368.03
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Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99%¹³C
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LAST TESTED: (mm/dd/yyyy) 05/27/2016
EXPIRY DATE: (mm/dd/yyyy) 05/27/2021
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ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:

B.G. Chittim

Date: 07/05/2016
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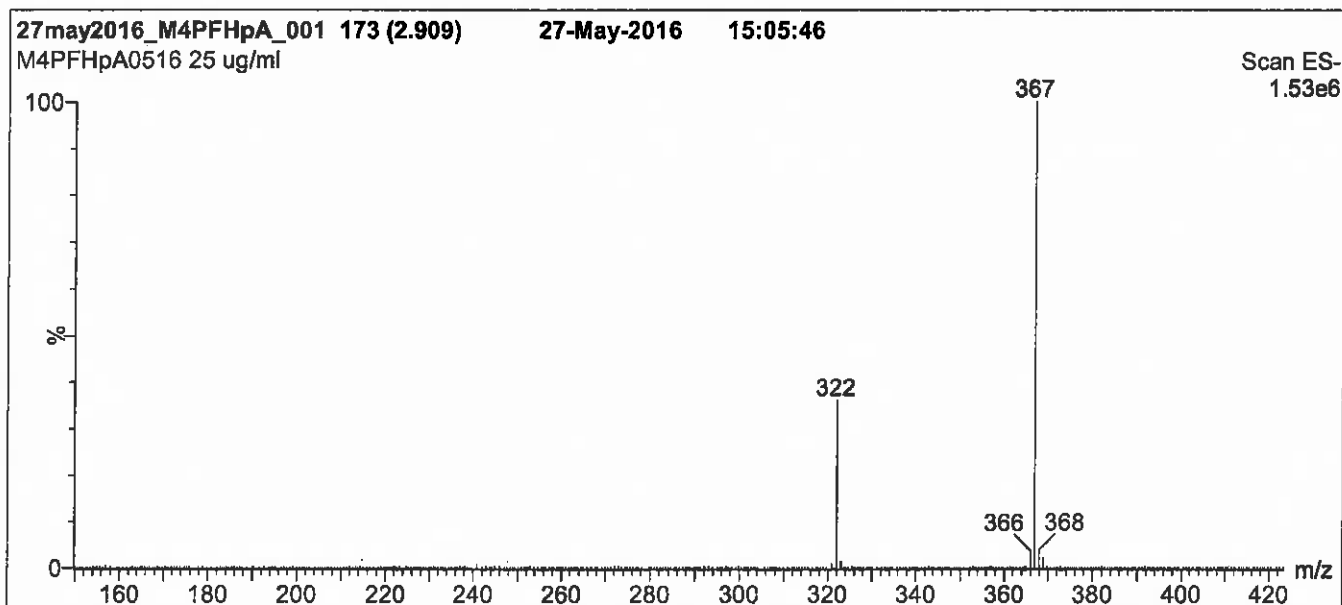
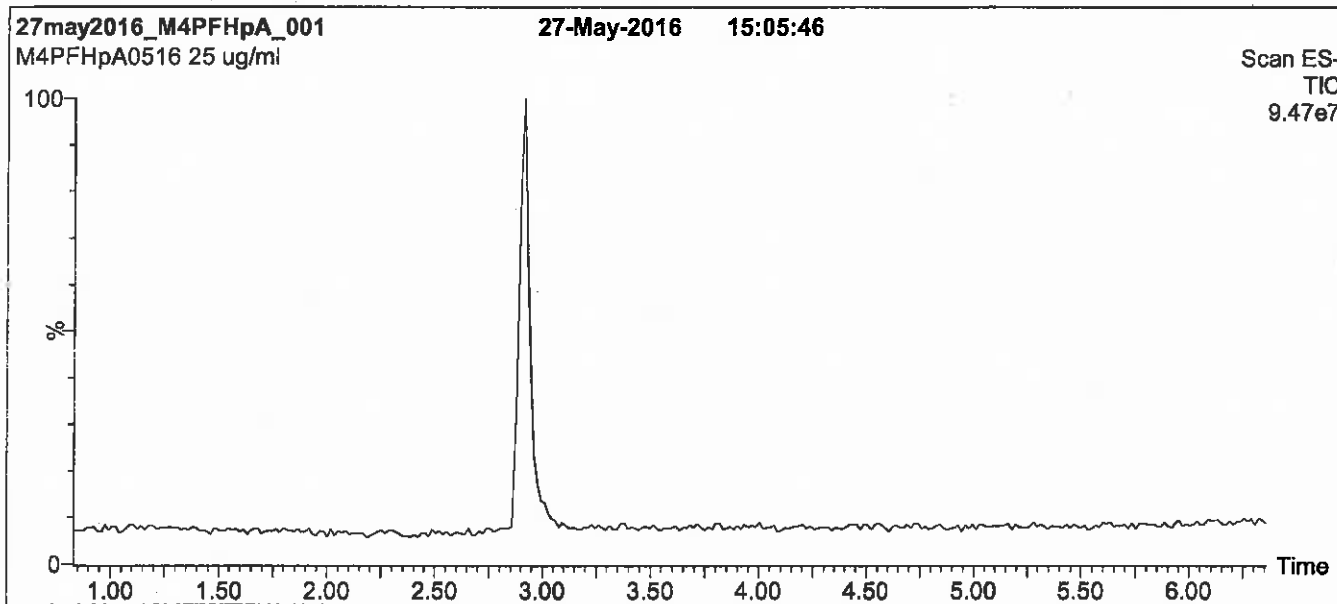
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 Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min.

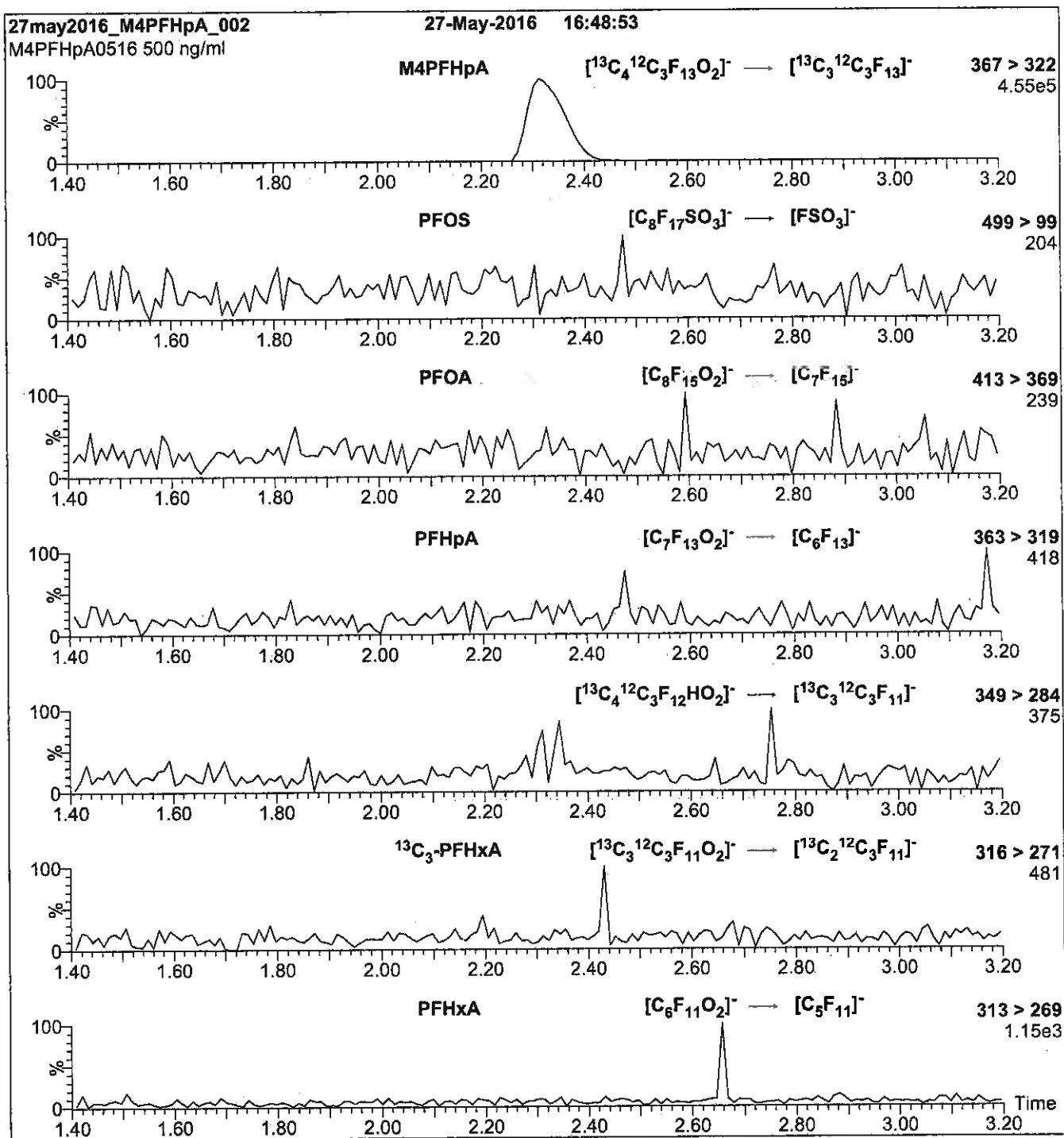
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M4PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 11

Reagent

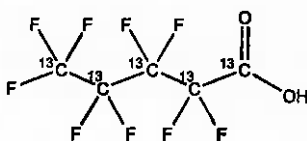
LCM5PFPEA_00009



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFPeA **LOT NUMBER:** M5PFPeA1116
COMPOUND: Perfluoro-n-[¹³C₈]pentanoic acid
STRUCTURE: **CAS #:** Not available



| | | | |
|----------------------------------|---|--------------------------|--|
| MOLECULAR FORMULA: | ¹³ C ₈ HF ₉ O ₂ | MOLECULAR WEIGHT: | 269.01 |
| CONCENTRATION: | 50 ± 2.5 µg/ml | SOLVENT(S): | Methanol Water (<1%) |
| CHEMICAL PURITY: | >98% | ISOTOPIC PURITY: | ≥99% ¹³ C (¹³ C ₈) |
| LAST TESTED: (mm/dd/yyyy) | 11/22/2016 | | |
| EXPIRY DATE: (mm/dd/yyyy) | 11/22/2021 | | |
| RECOMMENDED STORAGE: | Store ampoule in a cool, dark place | | |

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 12/09/2016
 B.G. Chittim (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

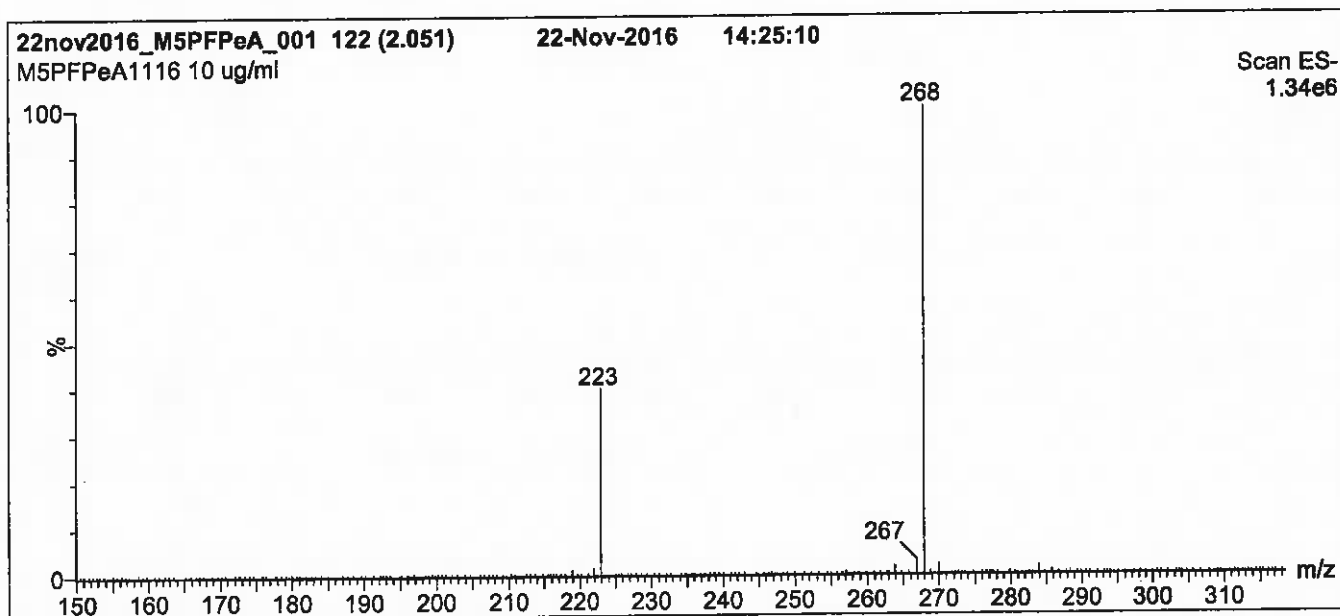
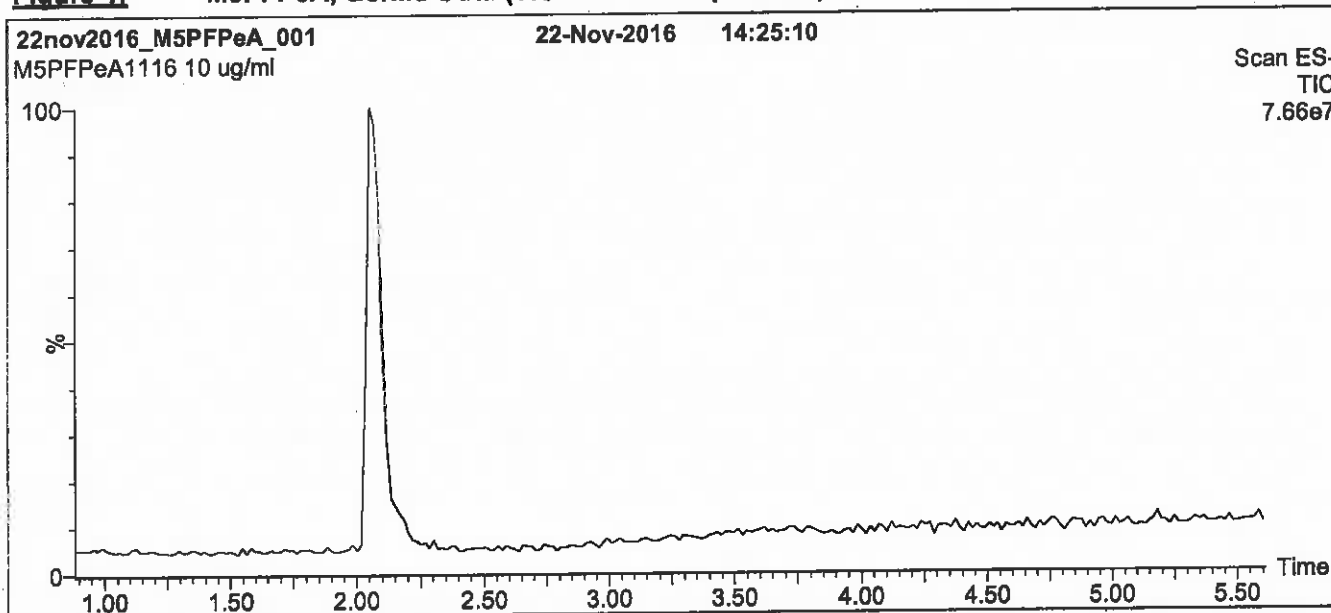
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M5PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

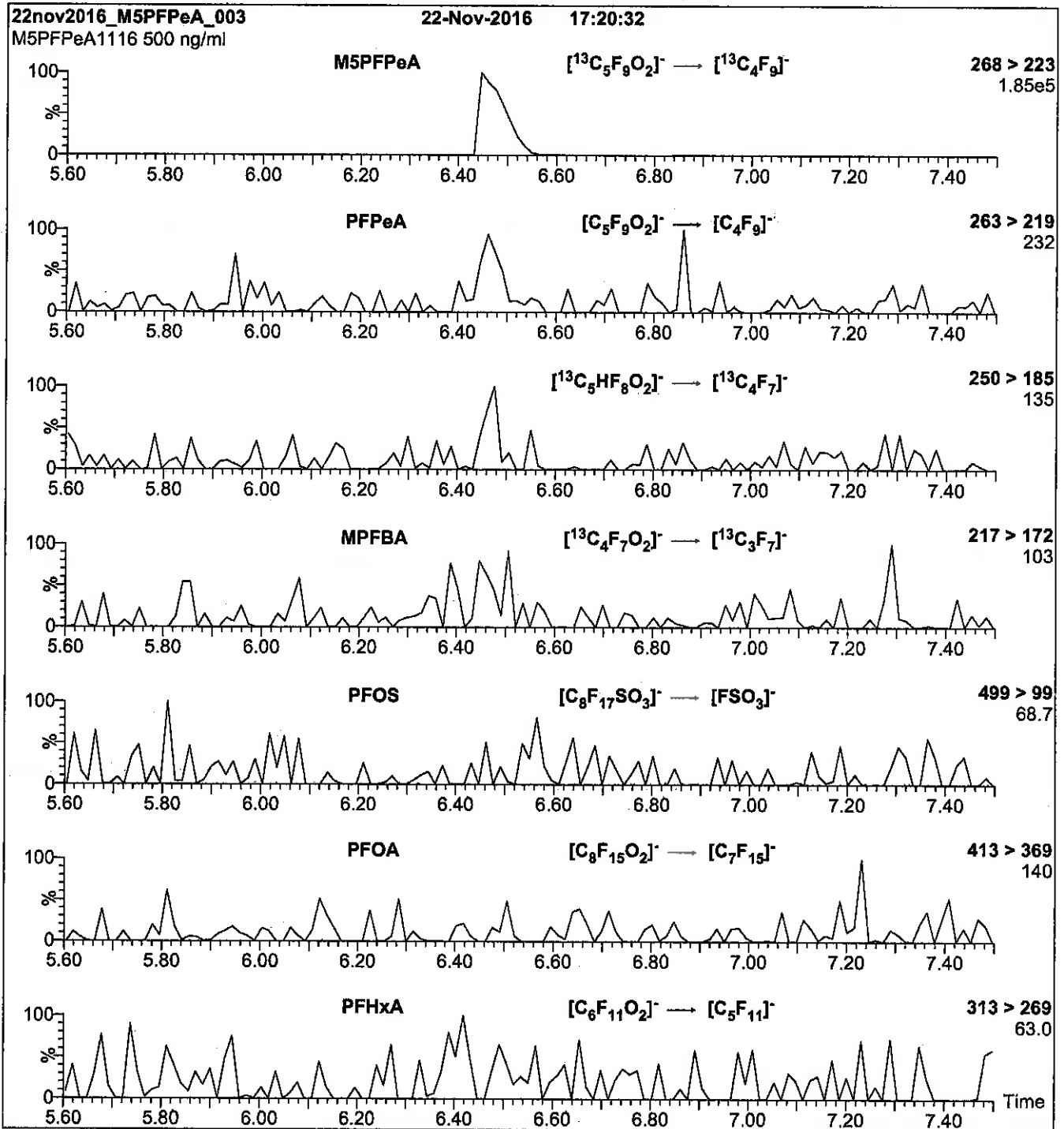
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M5PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 9

Reagent

LCM5PFPEA_00010

r: 5/3/19 *sw*



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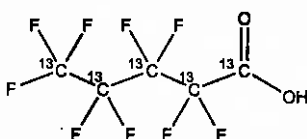
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[¹³C₅]pentanoic acid

LOT NUMBER: M5PFPeA1116

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₅HF₉O₂
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 269.01
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ¹³C
(¹³C₅)

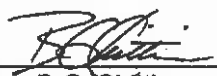
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-pentanoic acid.

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Certified By: 
B.G. Chittim
Date: 12/09/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

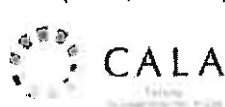
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

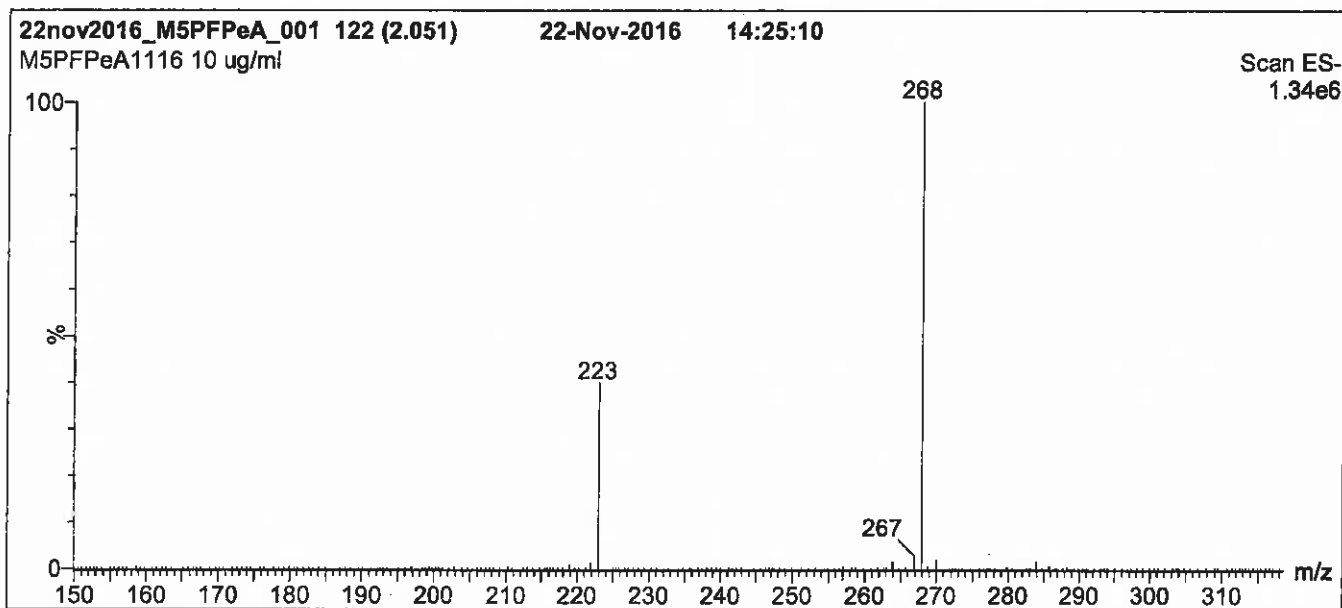
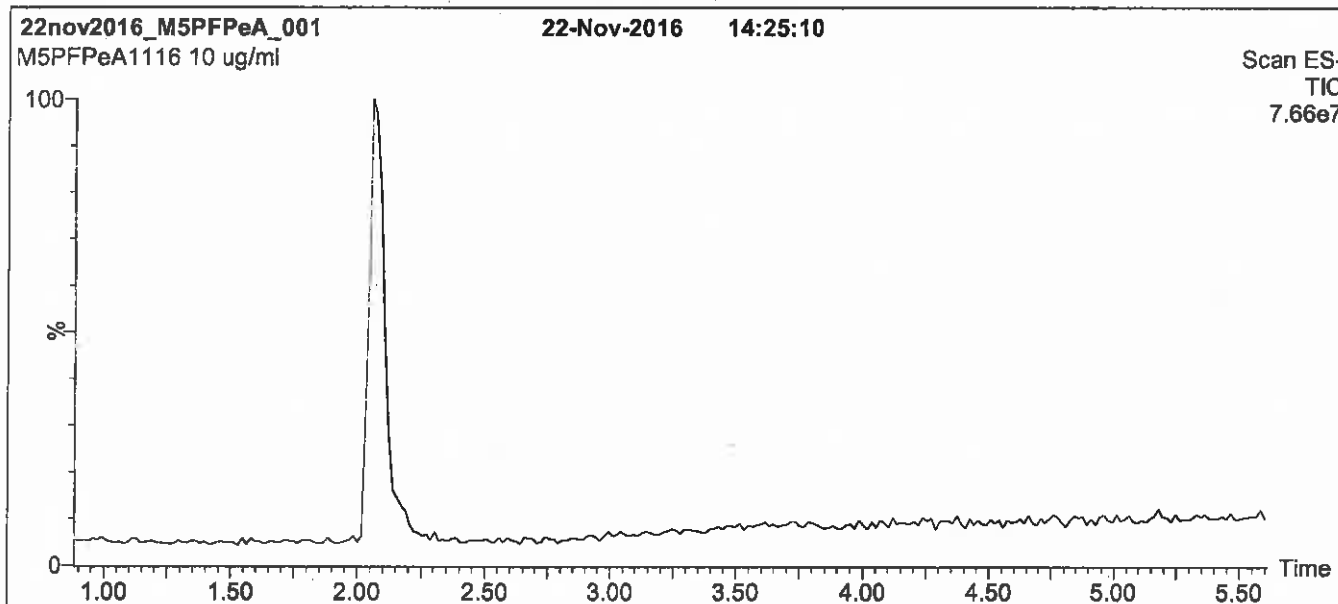
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M5PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

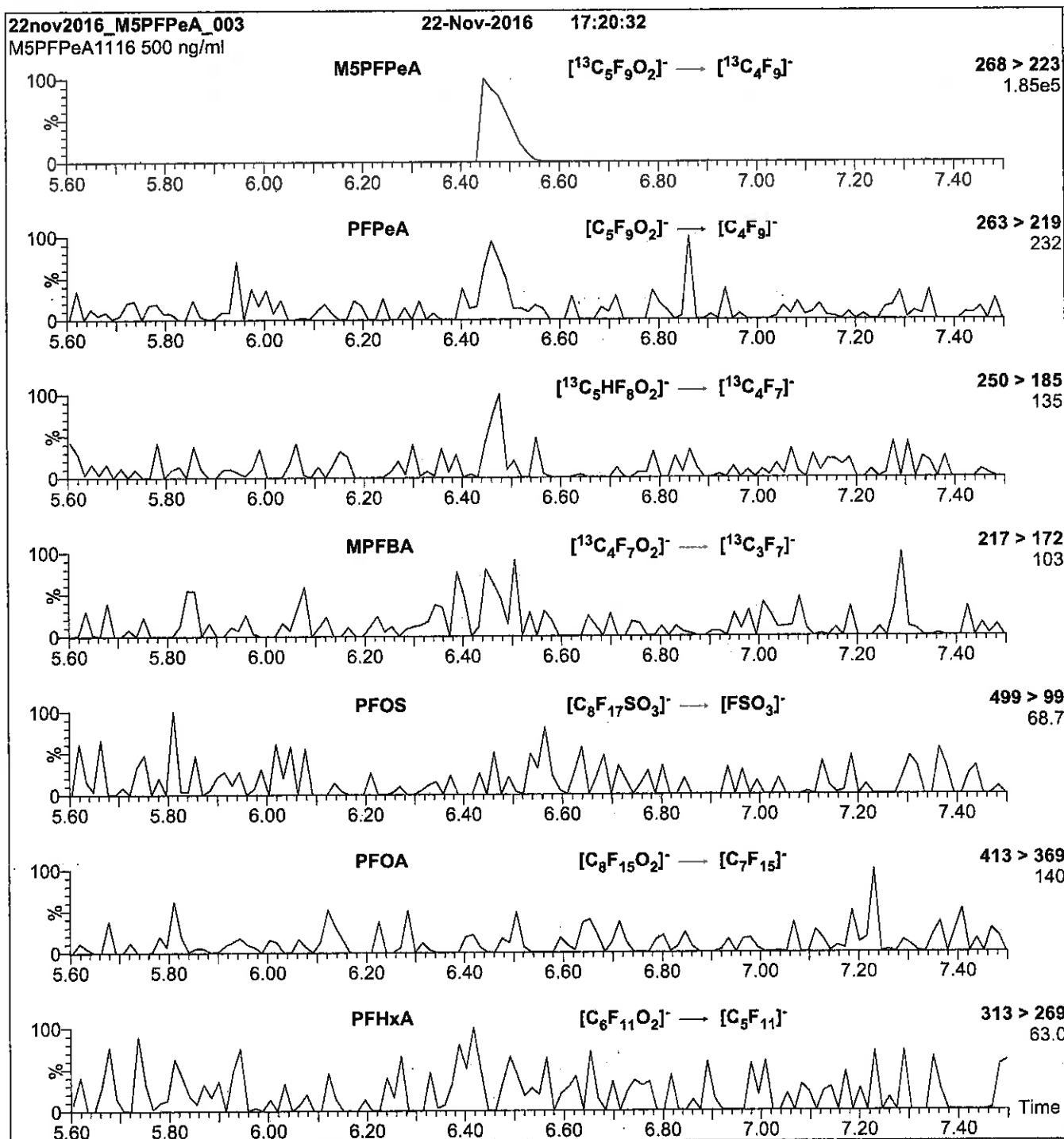
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M5PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.46\text{e-}3$
Collision Energy (eV) = 9

Reagent

LCM8FOSA_00012

17: 3/9/17 SKV



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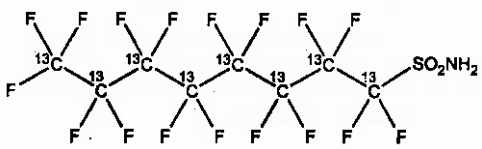
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[¹³C₈]octanesulfonamide

LOT NUMBER: M8FOSA1215I

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₈H₂F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/22/2015
EXPIRY DATE: (mm/dd/yyyy) 12/22/2020
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 507.09
SOLVENT(S): Isopropanol
ISOTOPIC PURITY: ≥99% ¹³C
 (¹³C₈)

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 12/13/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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SYNTHESIS / CHARACTERIZATION:

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EXPIRY DATE / PERIOD OF VALIDITY:

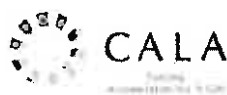
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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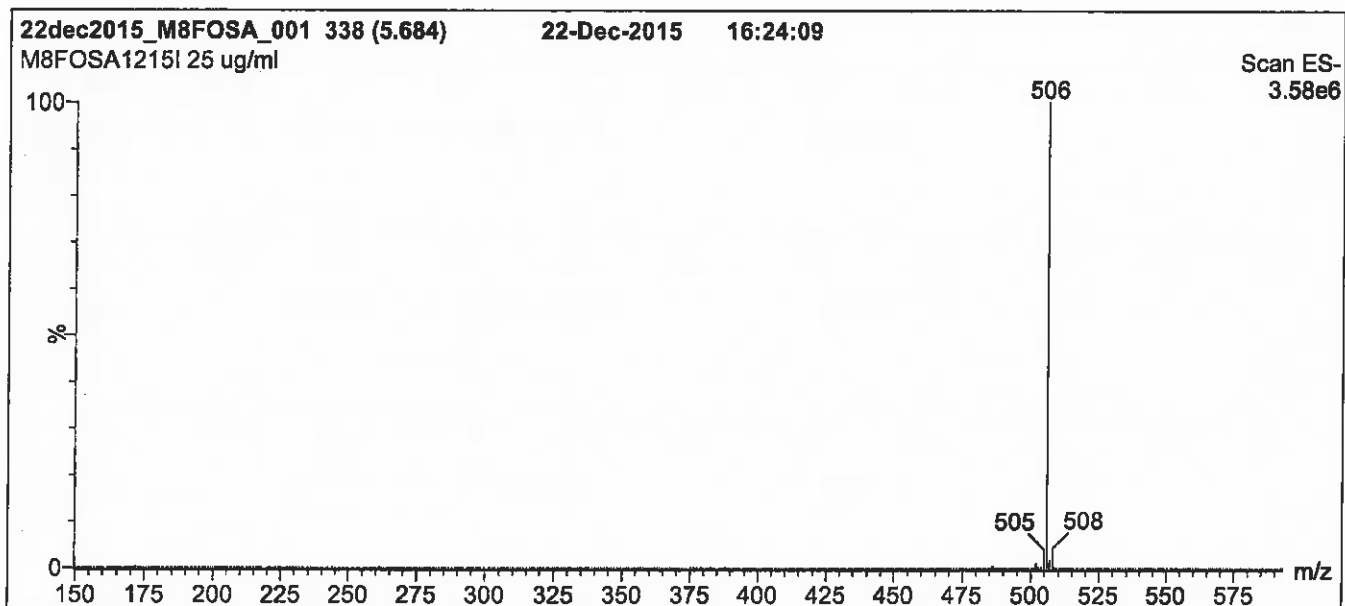
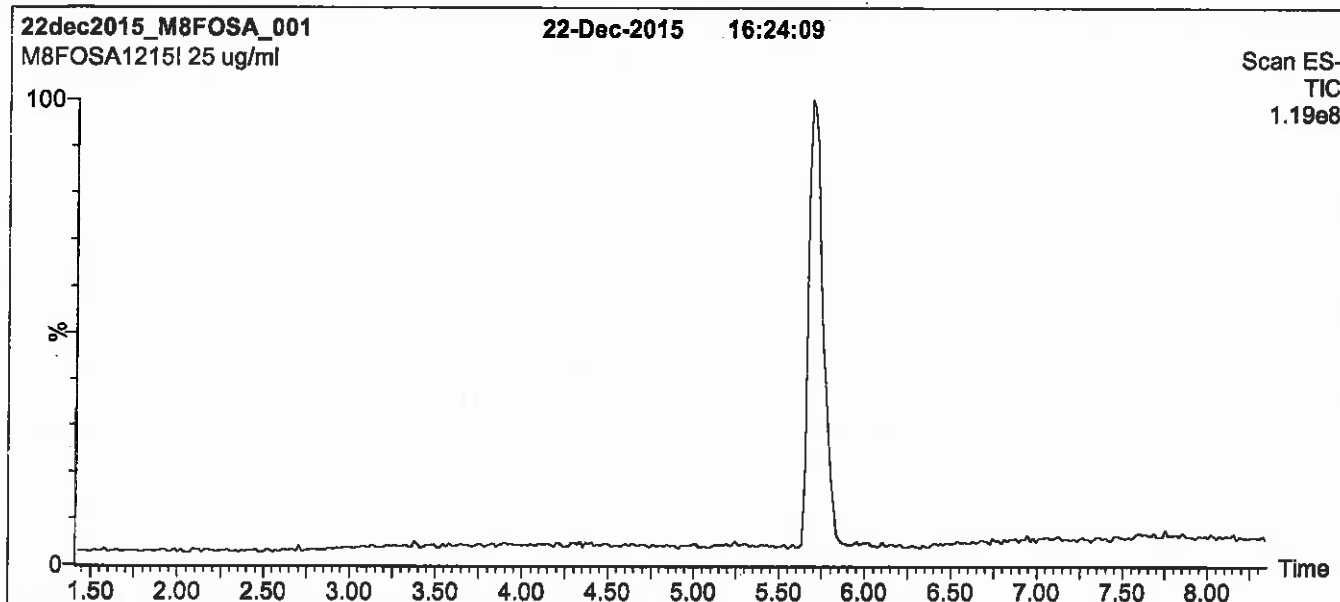
QUALITY MANAGEMENT:

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Figure 1: M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

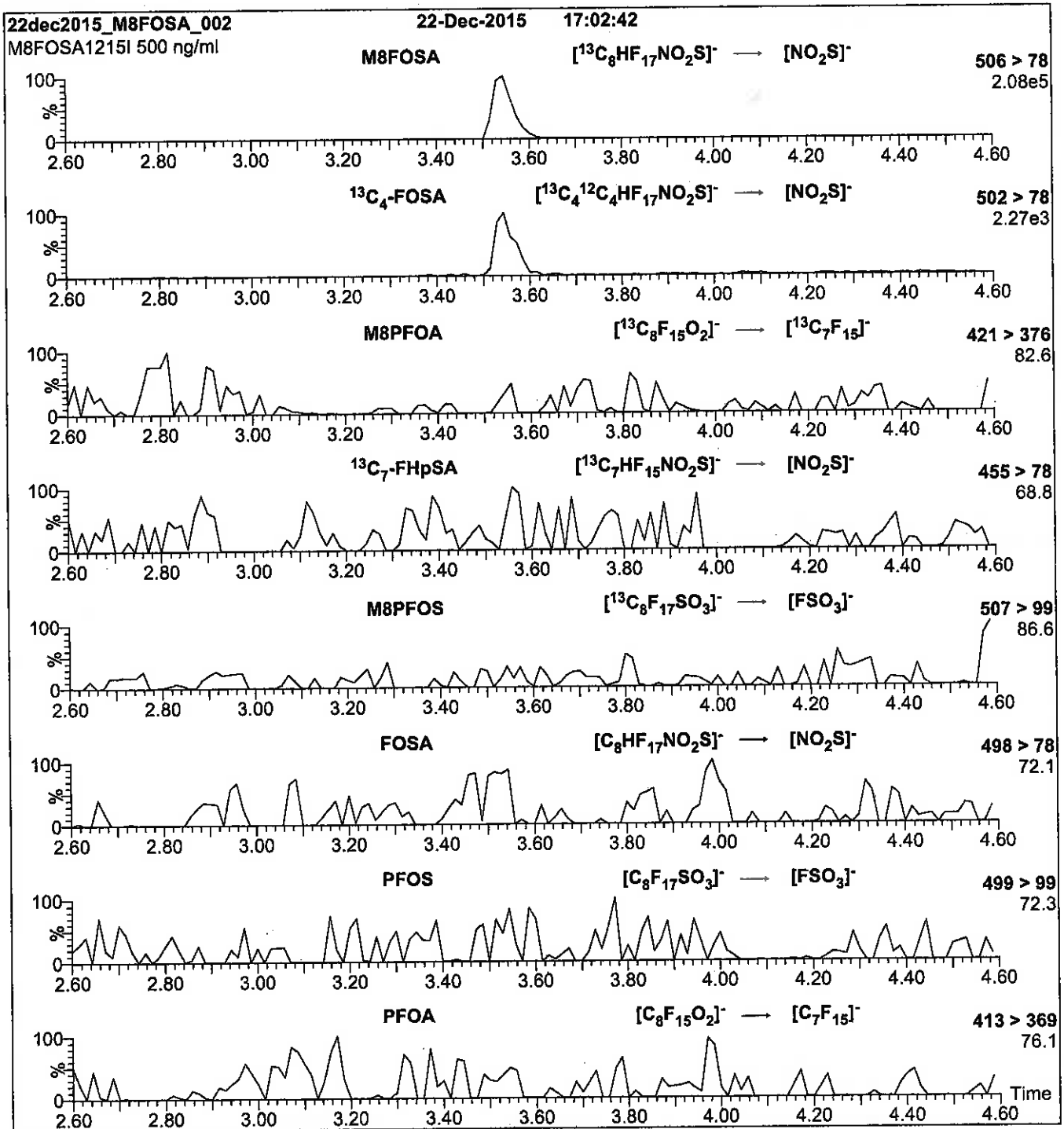
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 µl (500 ng/ml M8FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
 Collision Energy (eV) = 30

Reagent

LCM8FOSA_00013

r: 5/3/17 skv



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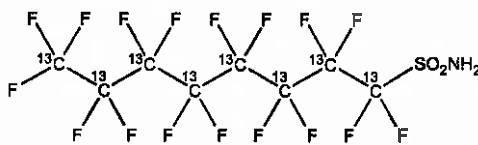
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[¹³C₈]octanesulfonamide

LOT NUMBER: M8FOSA1215I

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₈H₂F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/22/2015
EXPIRY DATE: (mm/dd/yyyy) 12/22/2020
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 507.09
SOLVENT(S): Isopropanol
ISOTOPIC PURITY: ≥99% ¹³C
 (¹³C₈)

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

• See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim
Date: 12/13/2016
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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where x is expressed as a relative standard uncertainty of the individual parameter.

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LIMITED WARRANTY:

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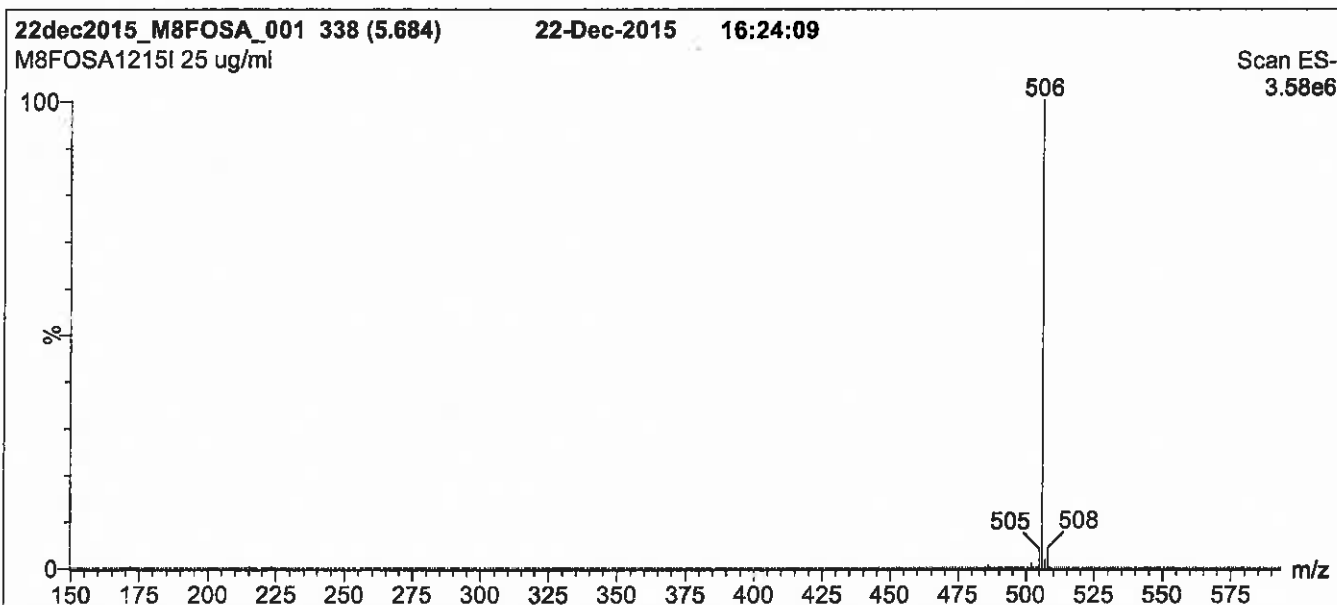
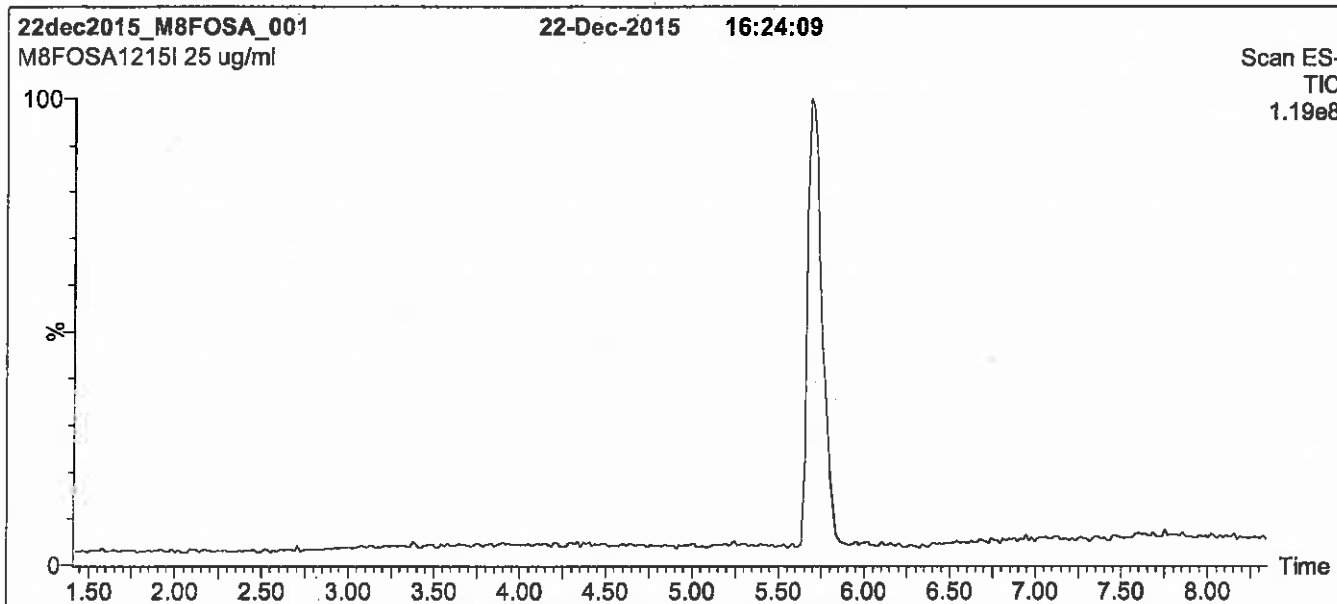
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

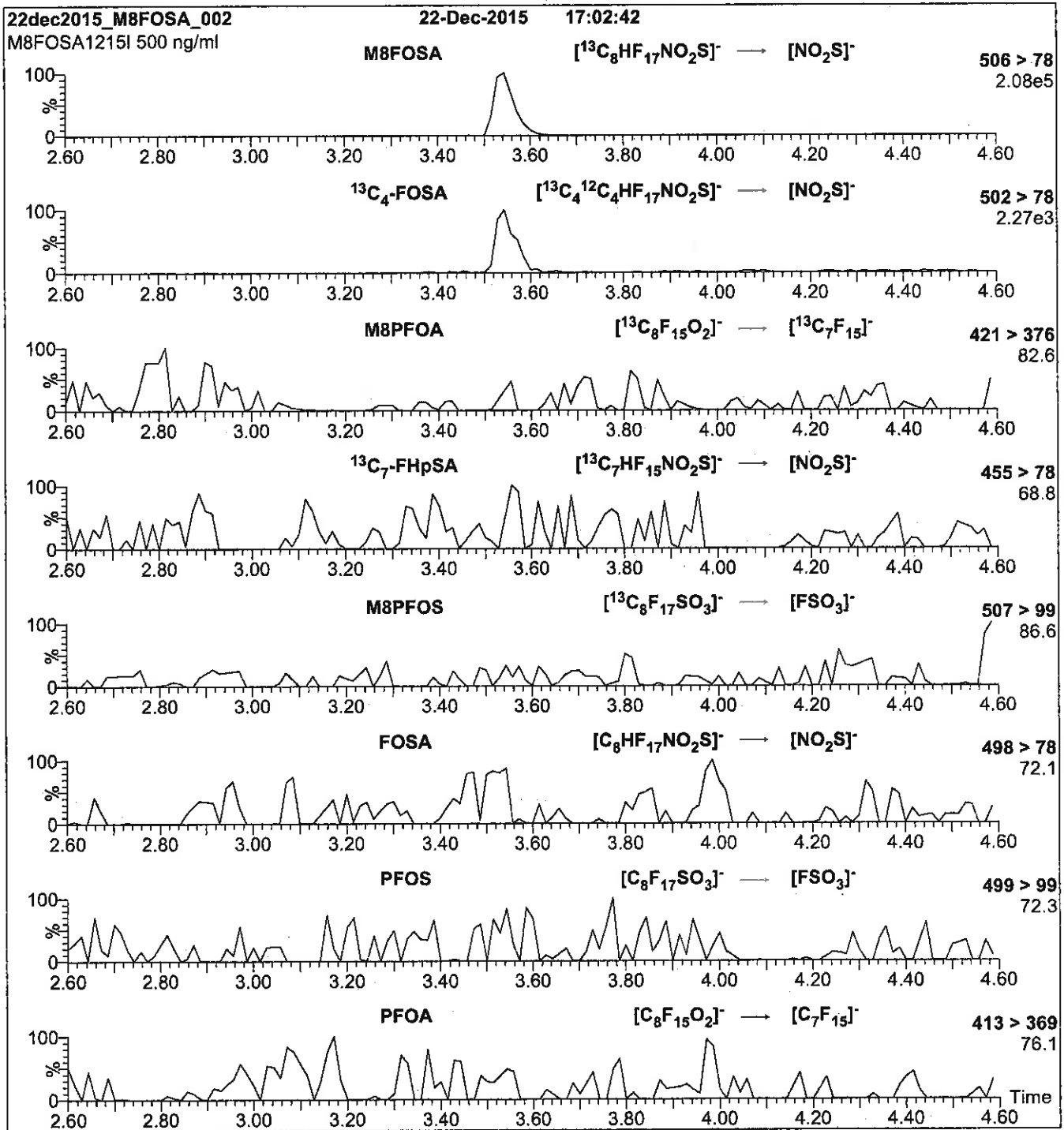
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M8FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00009

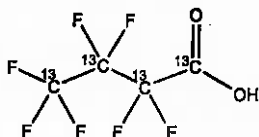


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFBA **LOT NUMBER:** MPFBA0516
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid

STRUCTURE: **CAS #:** Not available



| | | | |
|----------------------------------|---|--------------------------|--|
| MOLECULAR FORMULA: | ¹³ C ₄ HF ₇ O ₂ | MOLECULAR WEIGHT: | 218.01 |
| CONCENTRATION: | 50 ± 2.5 µg/ml | SOLVENT(S): | Methanol Water (<1%) |
| CHEMICAL PURITY: | >98% | ISOTOPIC PURITY: | ≥99% ¹³ C (1,2,3,4- ¹³ C ₄) |
| LAST TESTED: (mm/dd/yyyy) | 05/24/2016 | | |
| EXPIRY DATE: (mm/dd/yyyy) | 05/24/2021 | | |
| RECOMMENDED STORAGE: | Store ampoule in a cool, dark place | | |

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/30/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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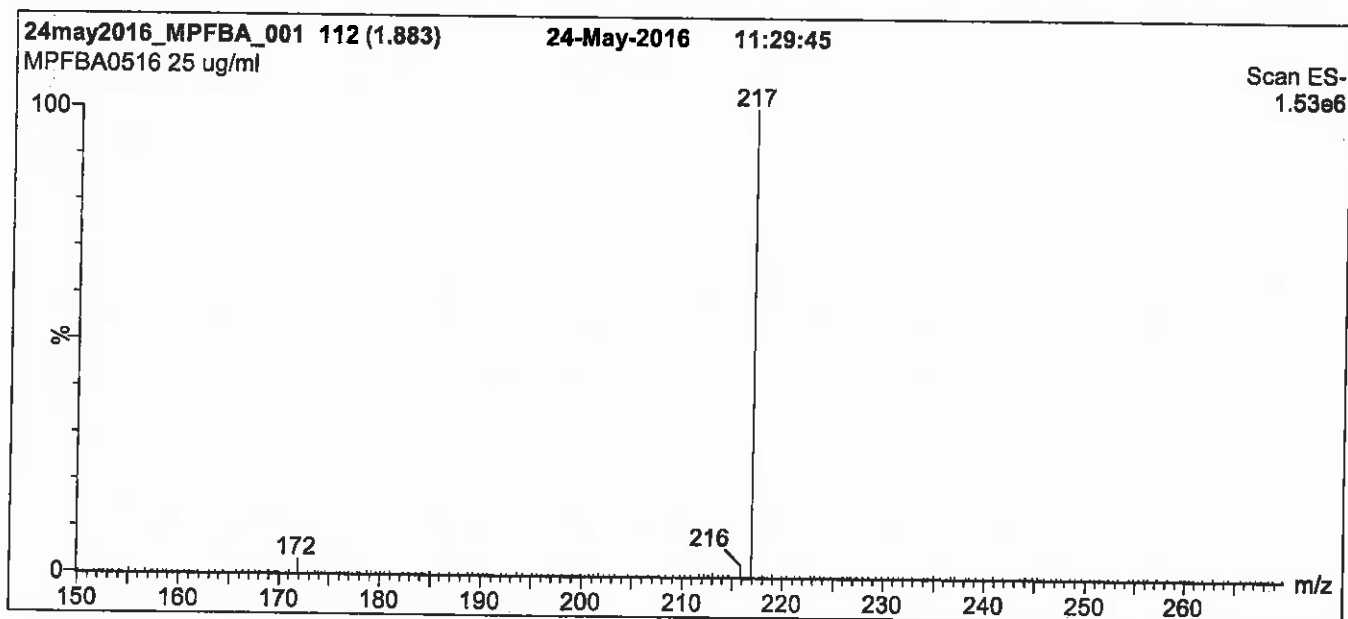
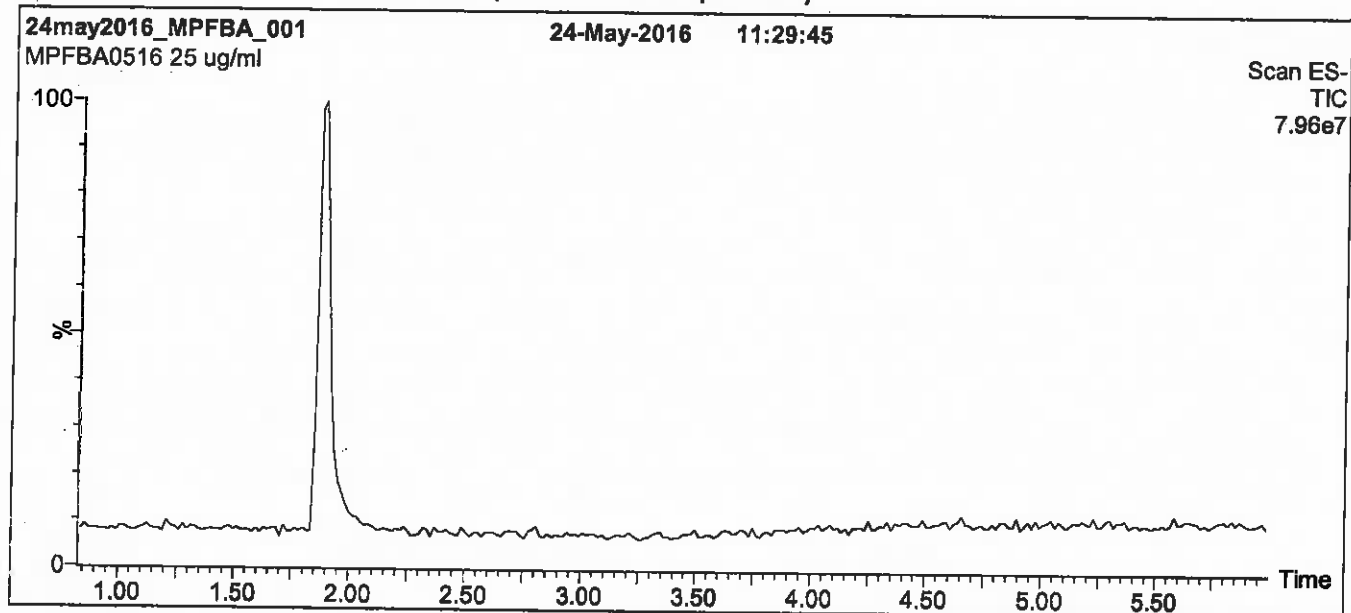
QUALITY MANAGEMENT:

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Figure 1: MPFBA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

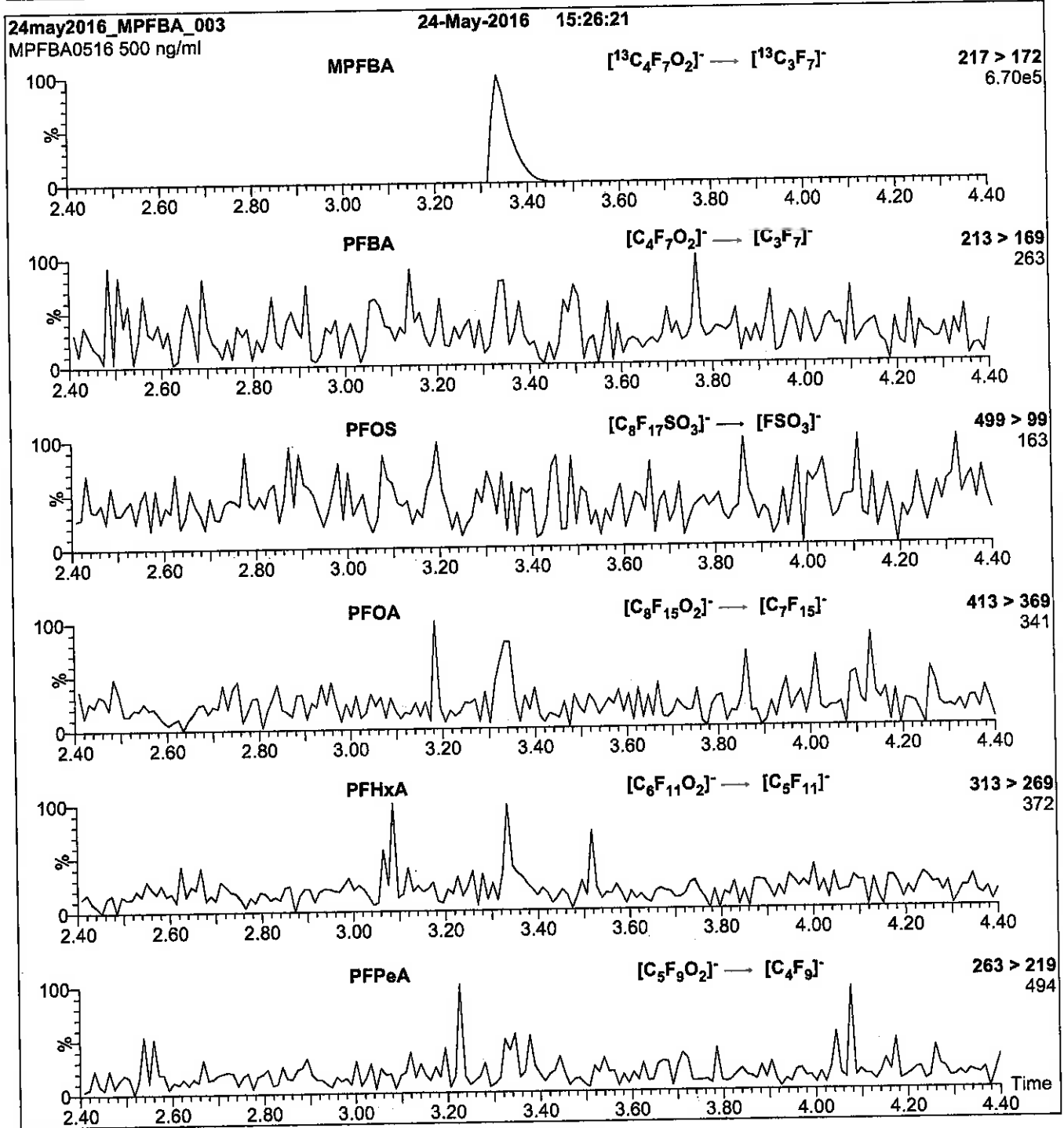
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFBA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 10

Reagent

LCMPFBA_00010

r: 5/3/17 SPV



WELLINGTON LABORATORIES

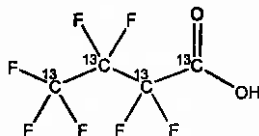
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFBA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid

LOT NUMBER: MPFBA0516

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄HF₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 218.01
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/24/2016

ISOTOPIC PURITY: ≥99%¹³C
(1,2,3,4-¹³C₄)

EXPIRY DATE: (mm/dd/yyyy) 05/24/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim

Date: 05/30/2016
(mm/dd/yyyy)

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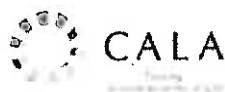
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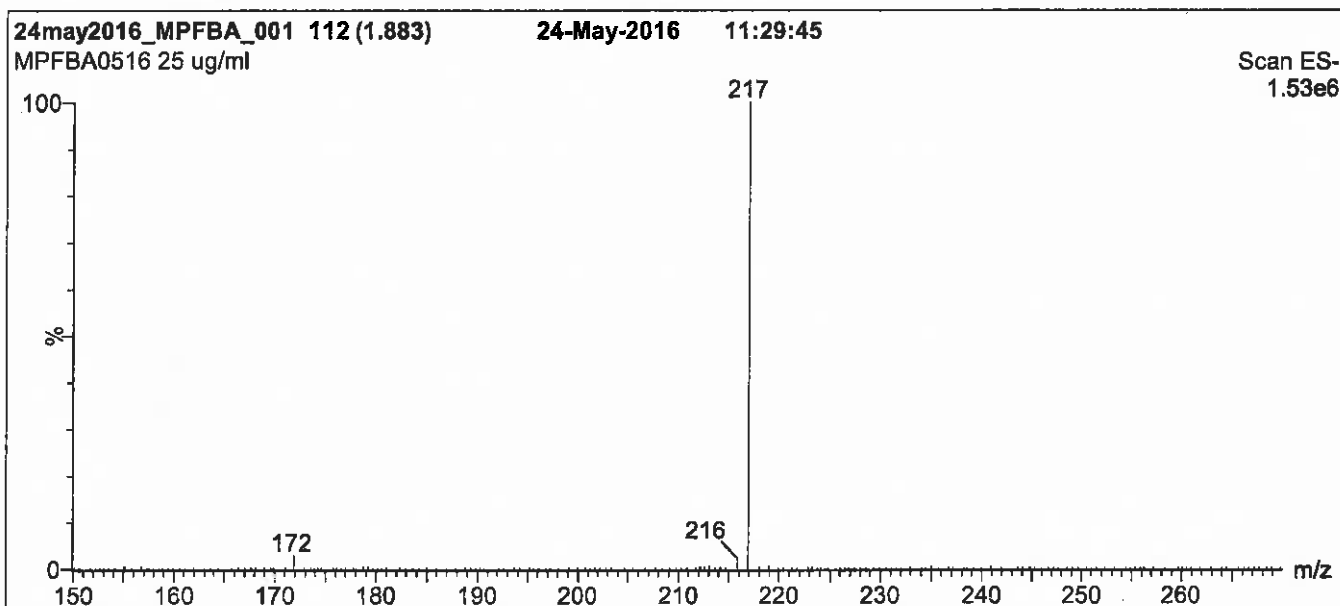
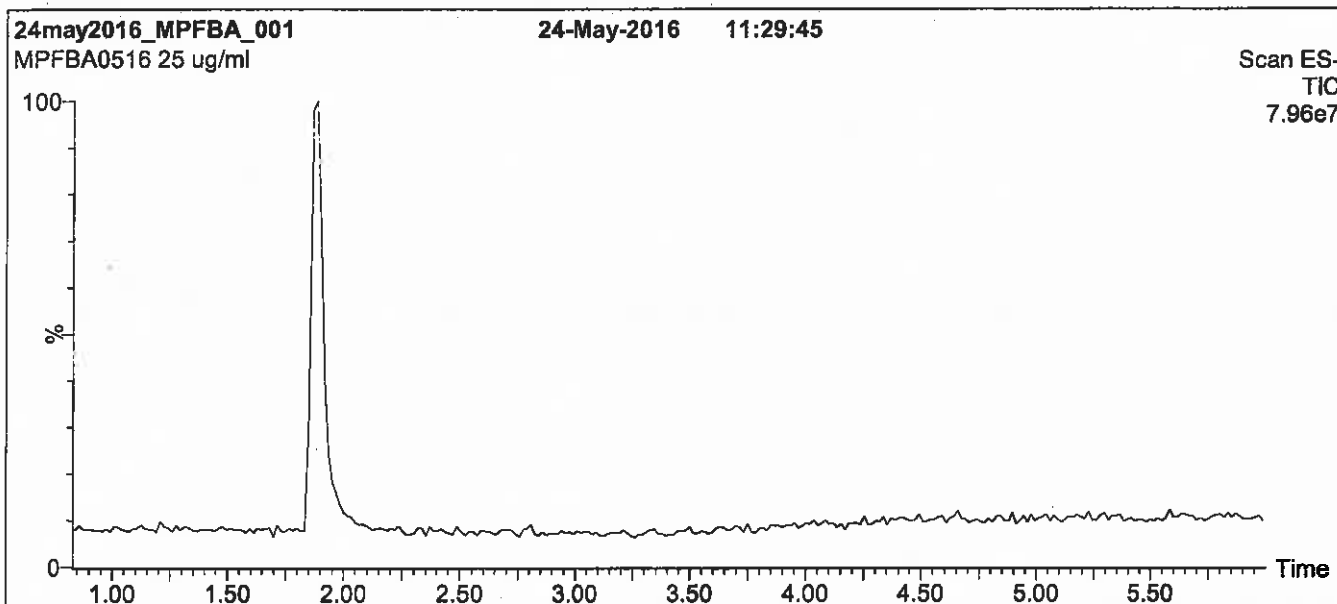
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Figure 1: MPFBA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH, Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

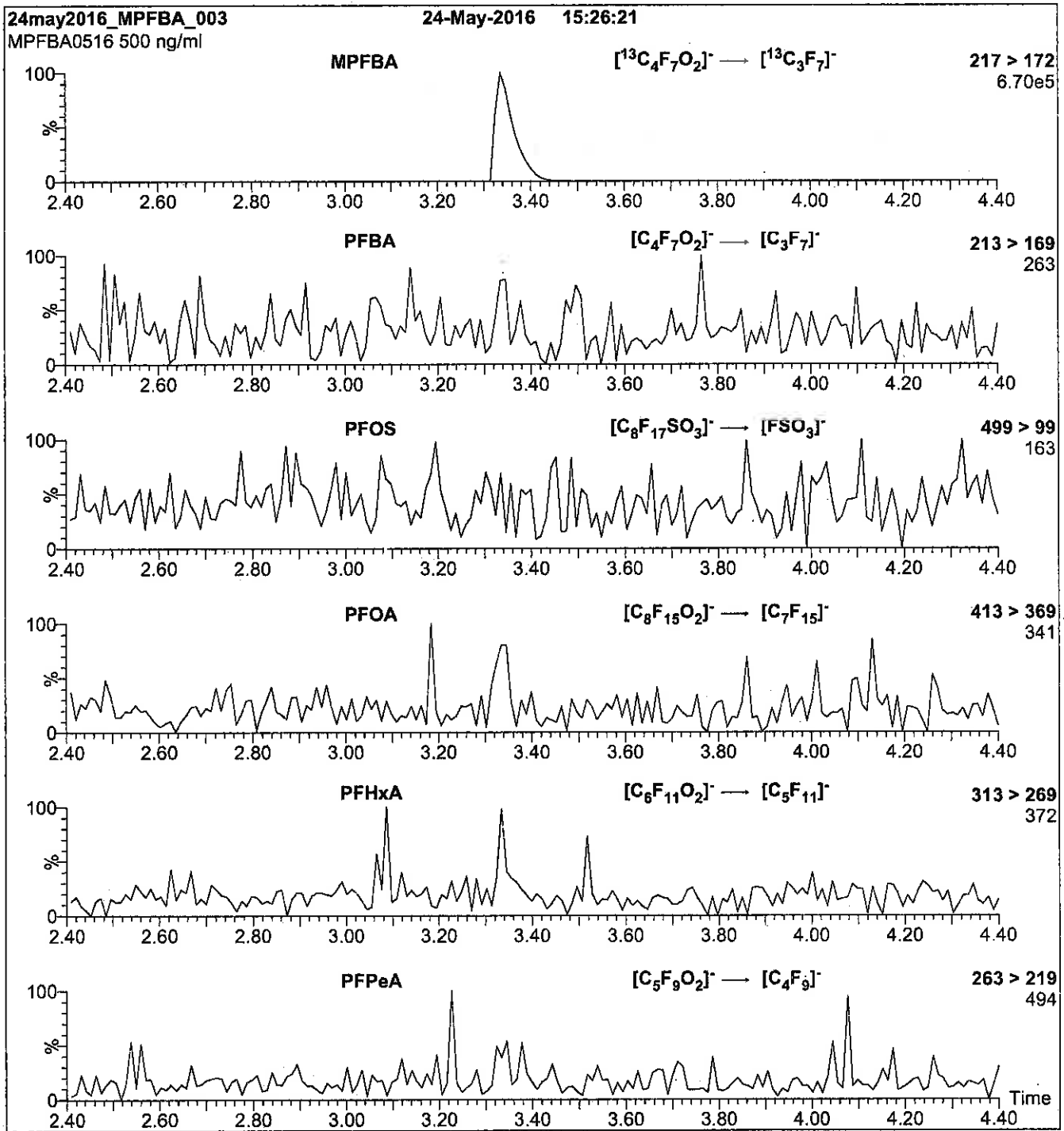
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFBA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 10

Reagent

LCMPFBS_00002

Scanned 10/14/16 R: gbc 9/22/16



739640
ID: LCMFBS_00002
Exp: 08/02/21 Prod: 58C
13C3-Perfluorobutanesulfo

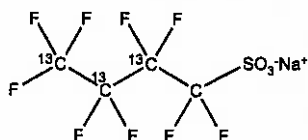


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBS **LOT NUMBER:** M3PFBS0815
COMPOUND: Sodium perfluoro-1-[2,3,4-¹³C₃]butanesulfonate

STRUCTURE: **CAS #:** Not available



| | | | |
|----------------------------------|---|--------------------------|--|
| MOLECULAR FORMULA: | ¹³ C ₃ ¹² CF ₉ SO ₃ Na | MOLECULAR WEIGHT: | 325.06 |
| CONCENTRATION: | 50.0 ± 2.5 µg/ml (Na salt) 46.5 ± 2.3 µg/ml (M3PFBS anion) | SOLVENT(S): | Methanol |
| CHEMICAL PURITY: | >98% | ISOTOPIC PURITY: | ≥99% ¹³ C (2,3,4- ¹³ C ₃) |
| LAST TESTED: (mm/dd/yyyy) | 08/02/2016 | | |
| EXPIRY DATE: (mm/dd/yyyy) | 08/02/2021 | | |
| RECOMMENDED STORAGE: | Store ampoule in a cool, dark place | | |


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 08/05/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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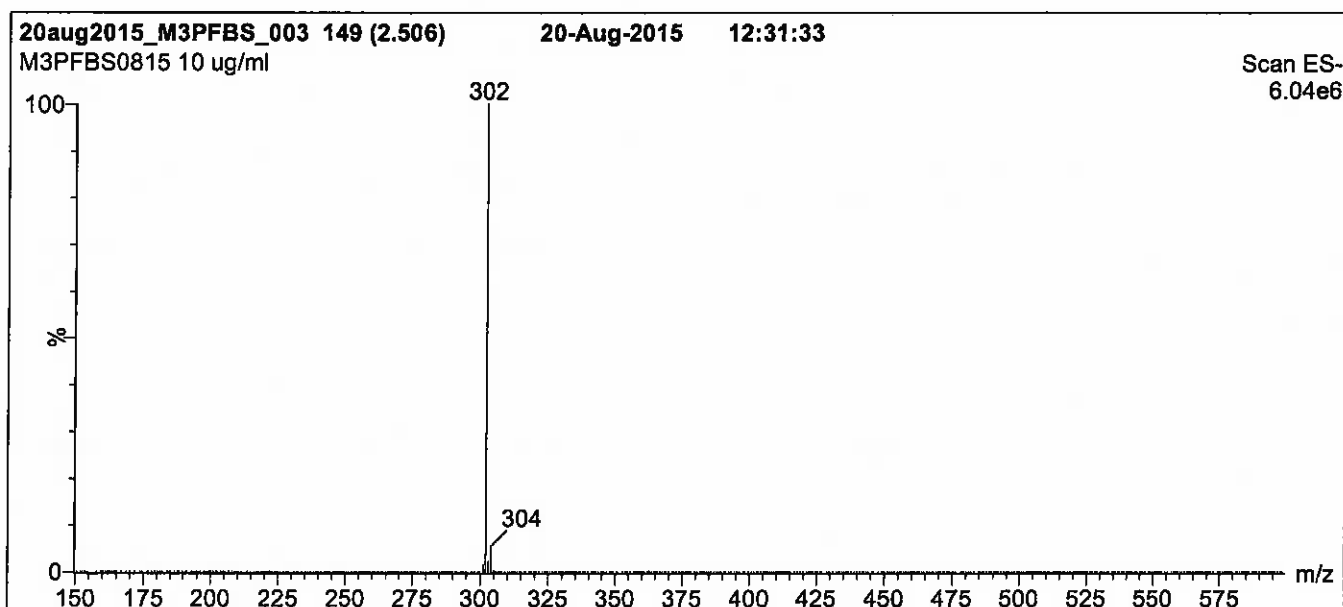
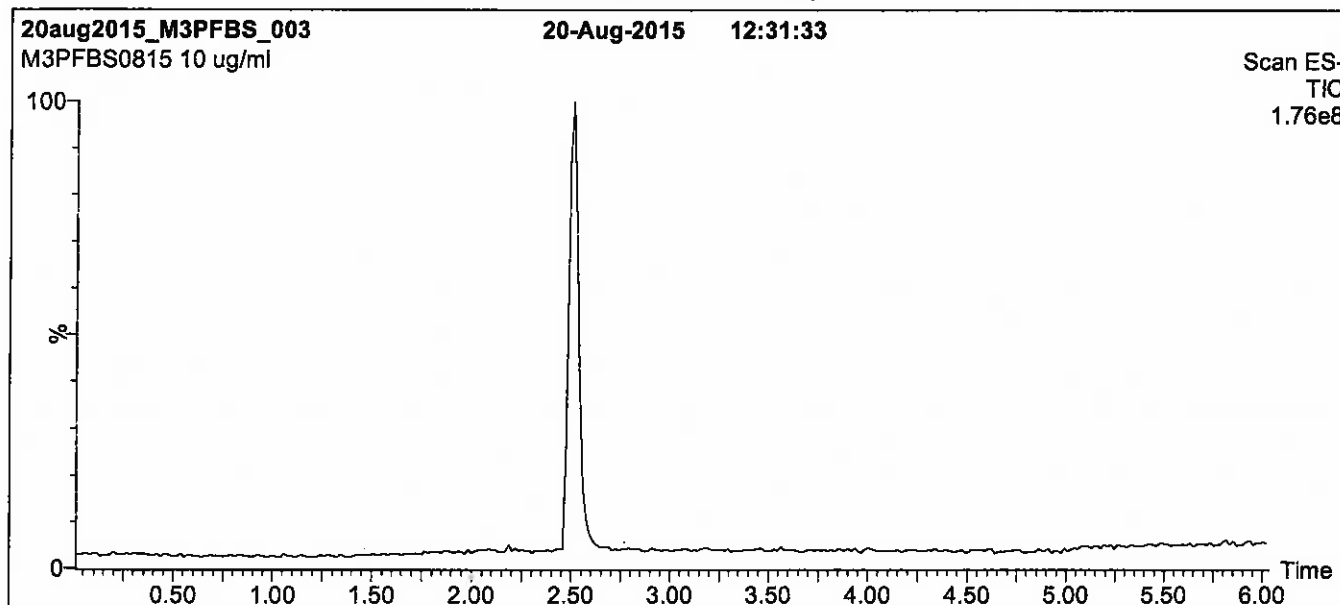
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MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 40% (80:20 MeOH:ACN) / 60% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for
 2 min before returning to initial conditions in 0.5 min.
 Time: 10 min

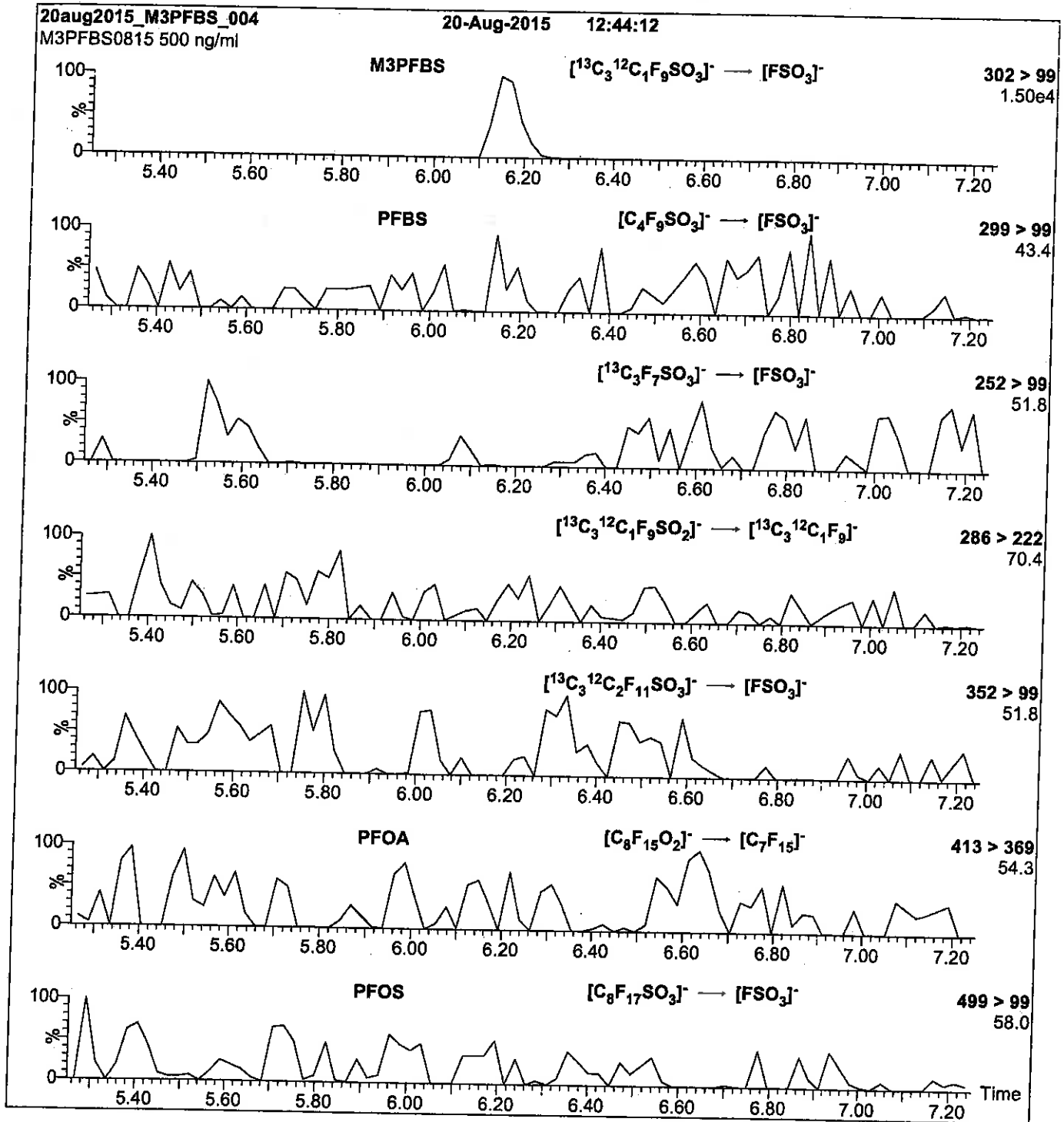
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 40.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: M3PFBS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M3PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LCMPFBS_00003

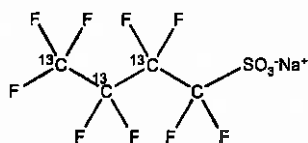


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBS **LOT NUMBER:** M3PFBS0815
COMPOUND: Sodium perfluoro-1-[2,3,4-¹³C₃]butanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₃¹²CF₉SO₃Na **MOLECULAR WEIGHT:** 325.06
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 46.5 ± 2.3 µg/ml (M3PFBS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 08/02/2016 (2,3,4-¹³C₃)
EXPIRY DATE: (mm/dd/yyyy) 08/02/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 08/05/2016
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

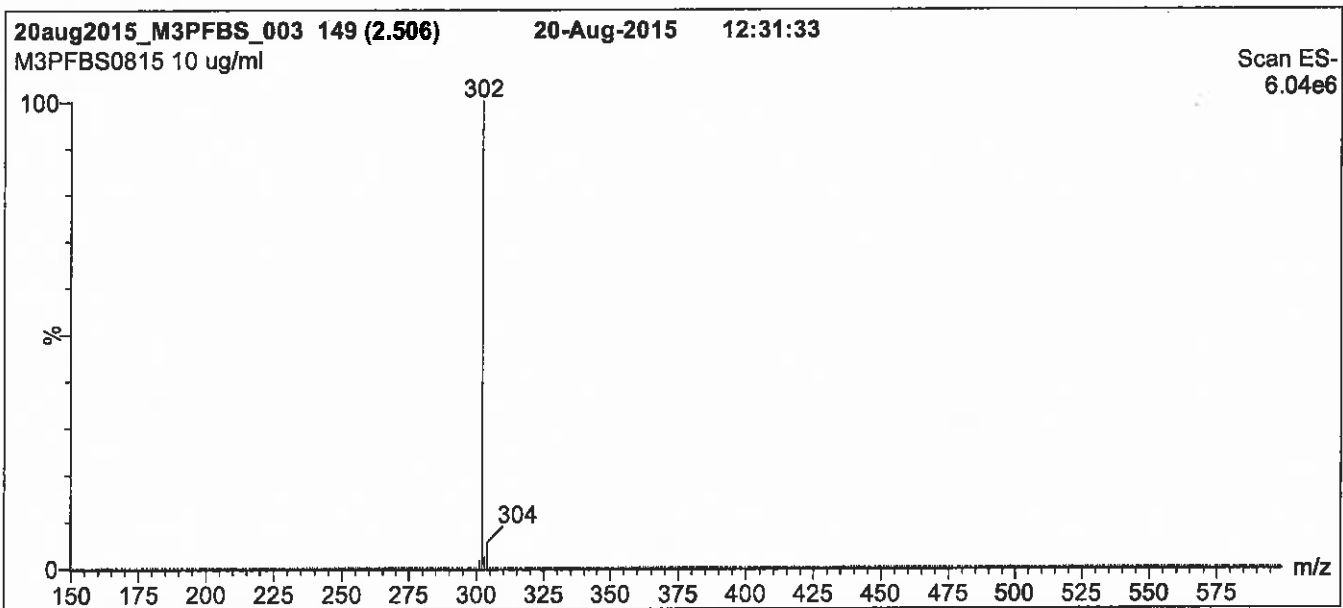
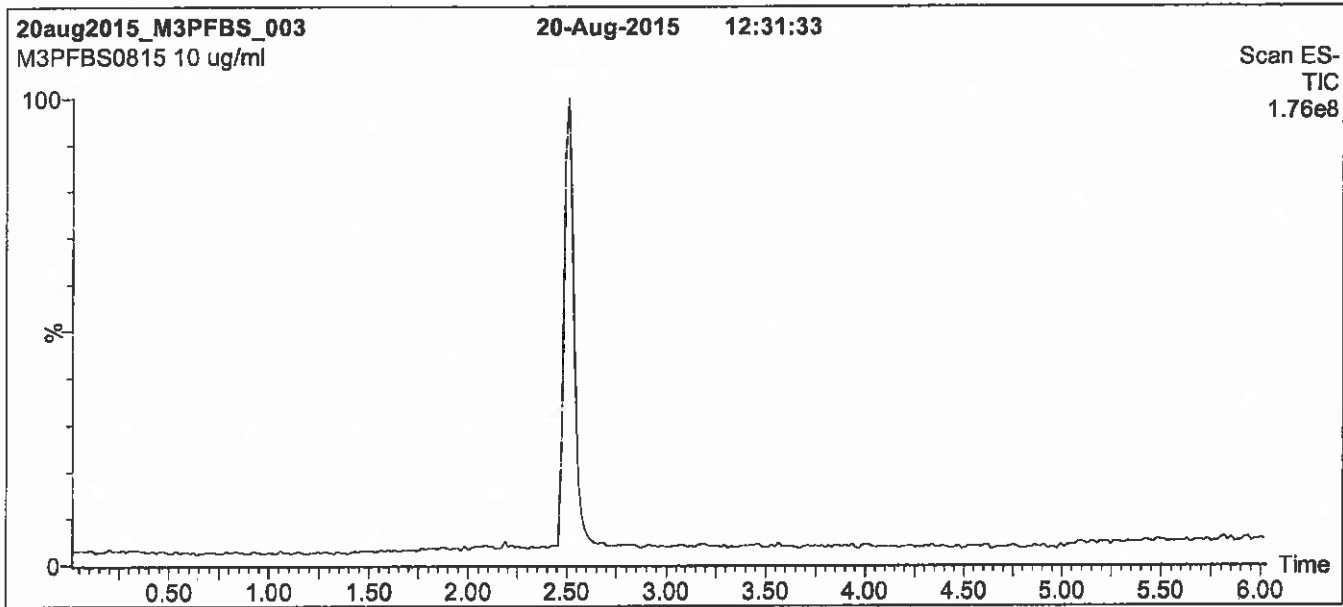
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M3PFBS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
1.7 μm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

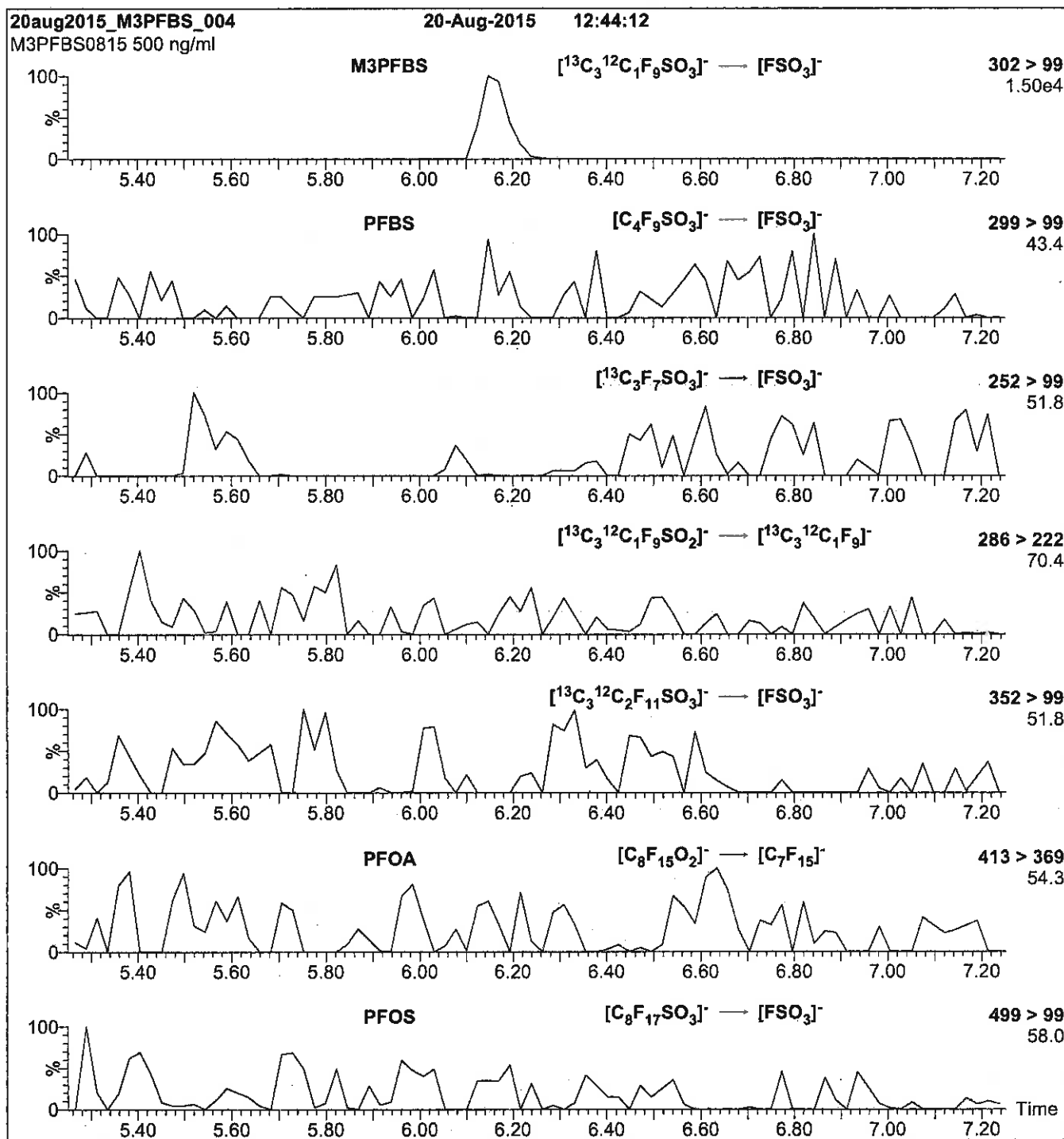
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M3PFBS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M3PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LCMPFDA_00013

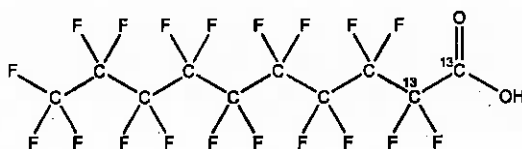


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA **LOT NUMBER:** MPFDA0916
COMPOUND: Perfluoro-n-[1,2-¹³C₂]decanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₈O₂ **MOLECULAR WEIGHT:** 516.07
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

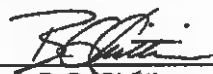
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of ¹³C₁-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 10/07/2016
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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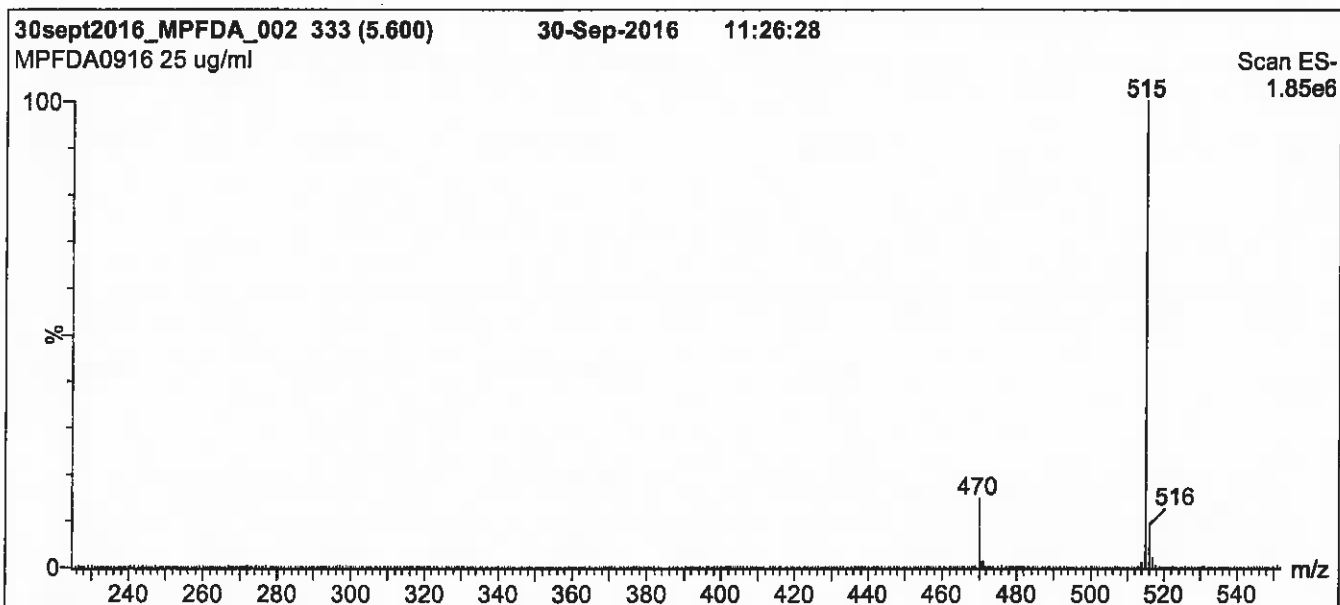
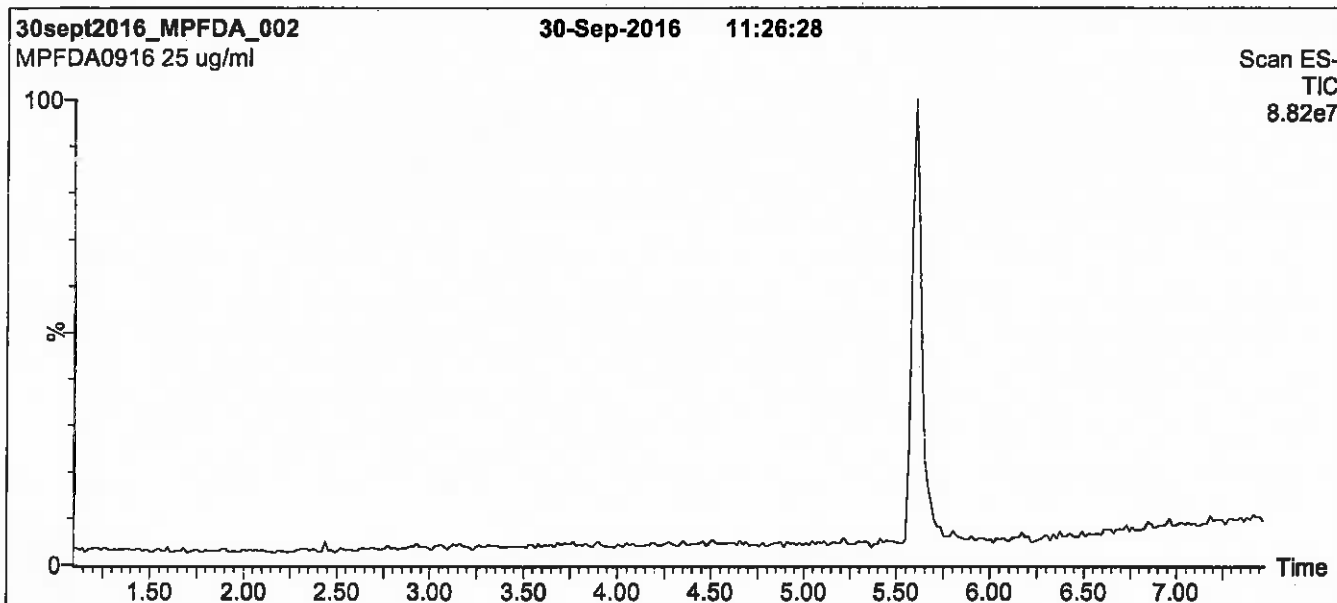
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μm, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

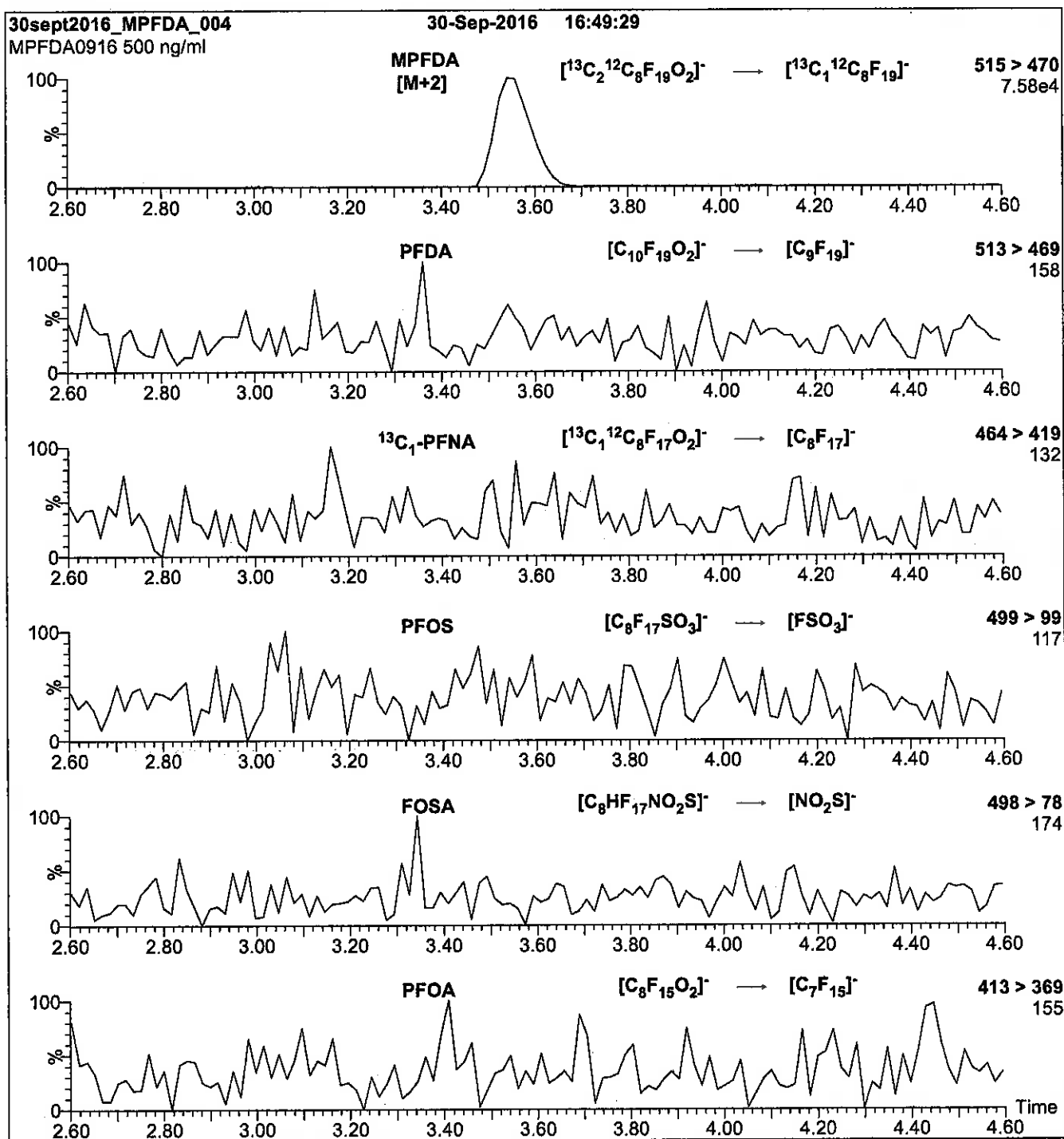
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 13

Reagent

LCMPFDA_00015

P: 5/31/17-SKJ
S: 5/16/17-SKJ

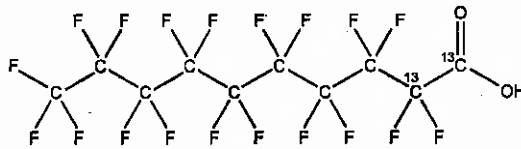


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA **LOT NUMBER:** MPFDA0916
COMPOUND: Perfluoro-n-[1,2-¹³C₂]decanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₈O₂ **MOLECULAR WEIGHT:** 516.07
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 09/30/2016 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of ¹³C₁-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 10/07/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

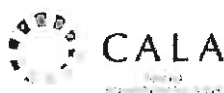
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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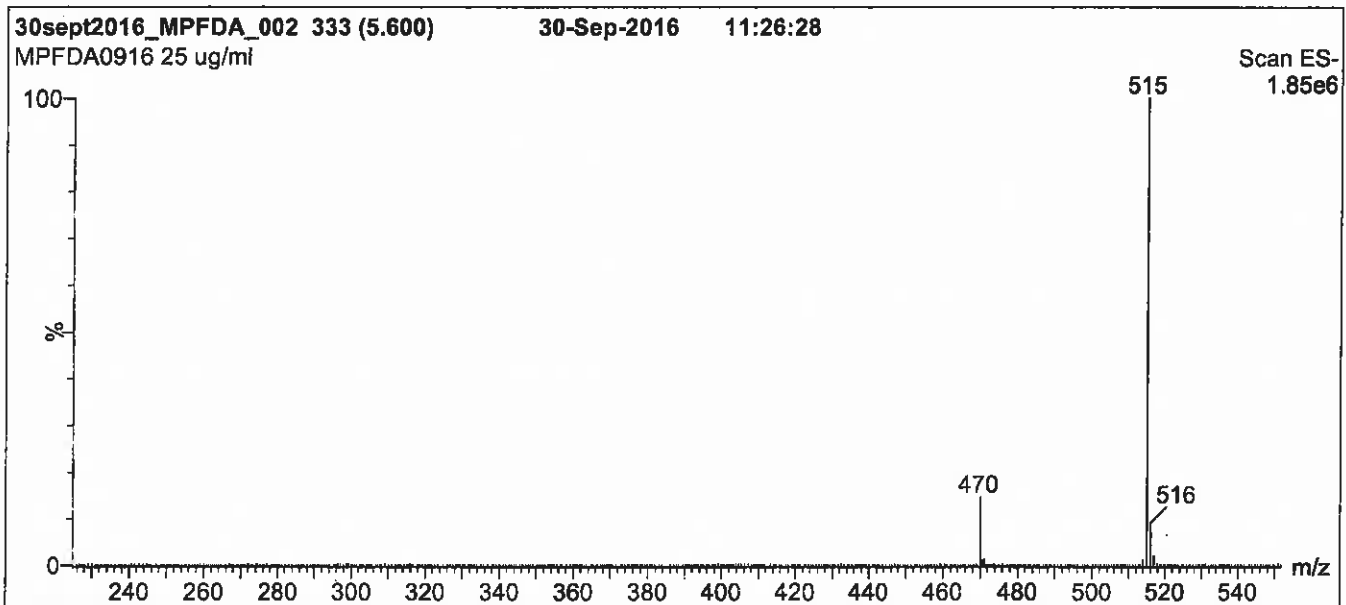
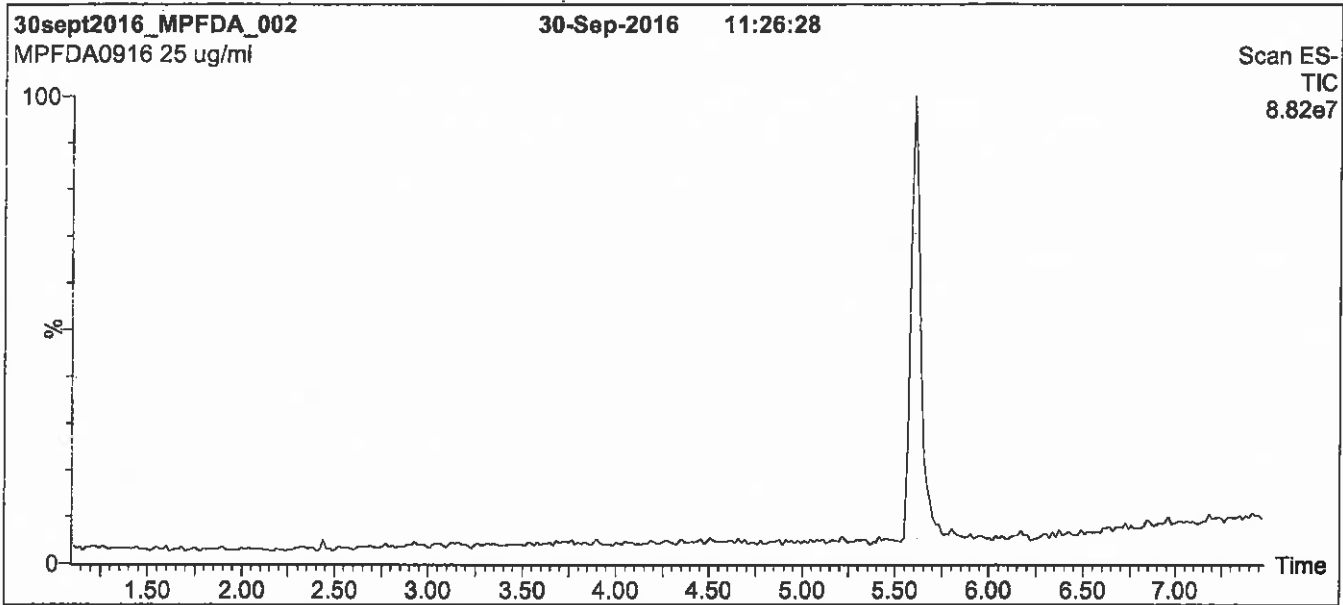
QUALITY MANAGEMENT:

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Figure 1: MPFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

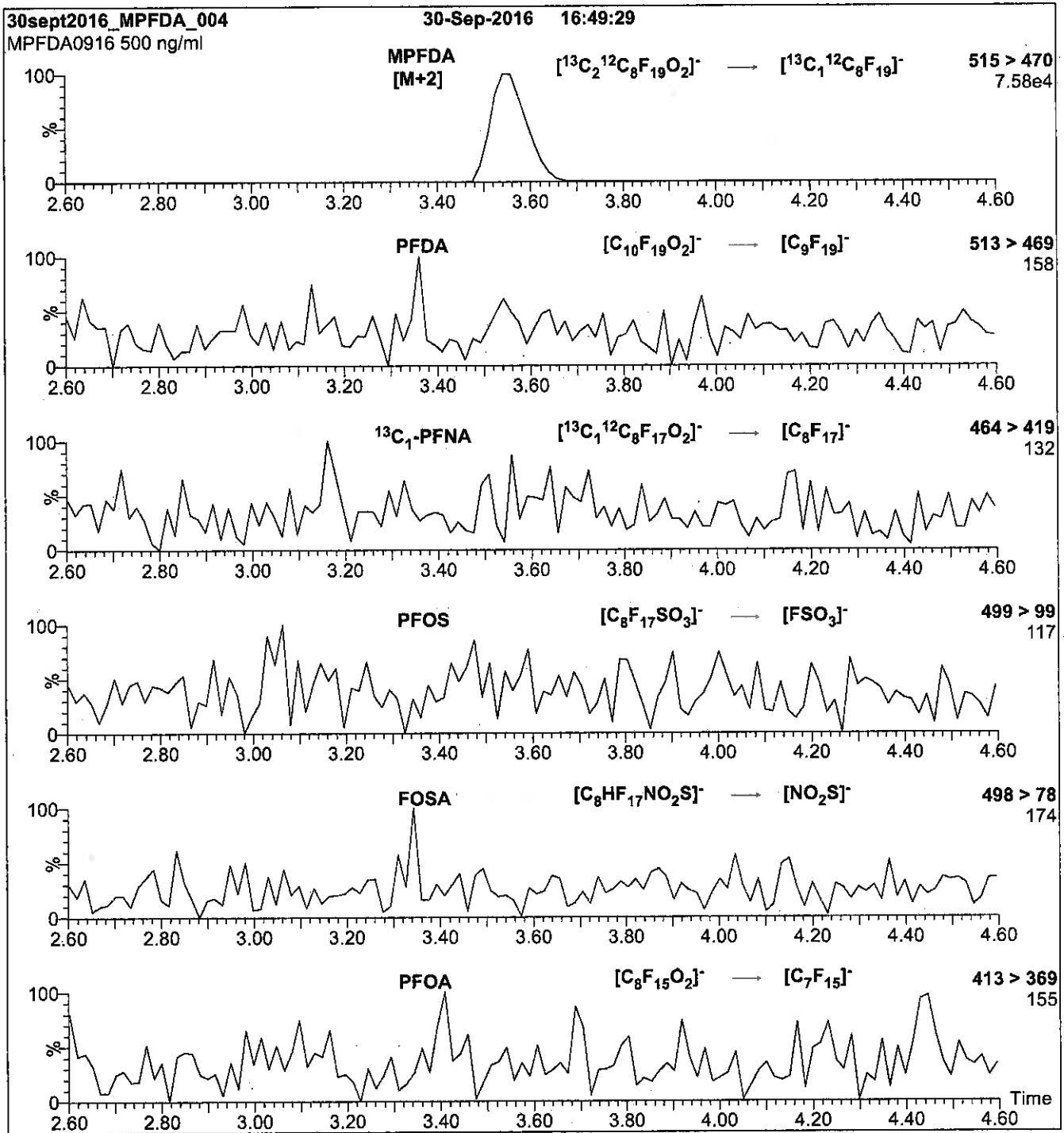
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 13

Reagent

LCMPFD_oA_00009

P: 3/9/17 SKW

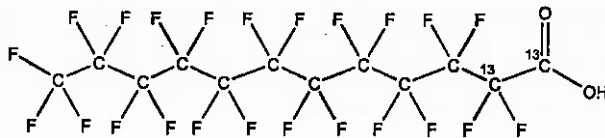


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA **LOT NUMBER:** MPFDoA0416
COMPOUND: Perfluoro-n-[1,2-¹³C₂]dodecanolic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₀HF₂₃O₂ **MOLECULAR WEIGHT:** 616.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 04/08/2016 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 04/08/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/15/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

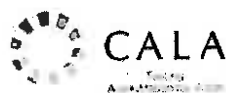
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

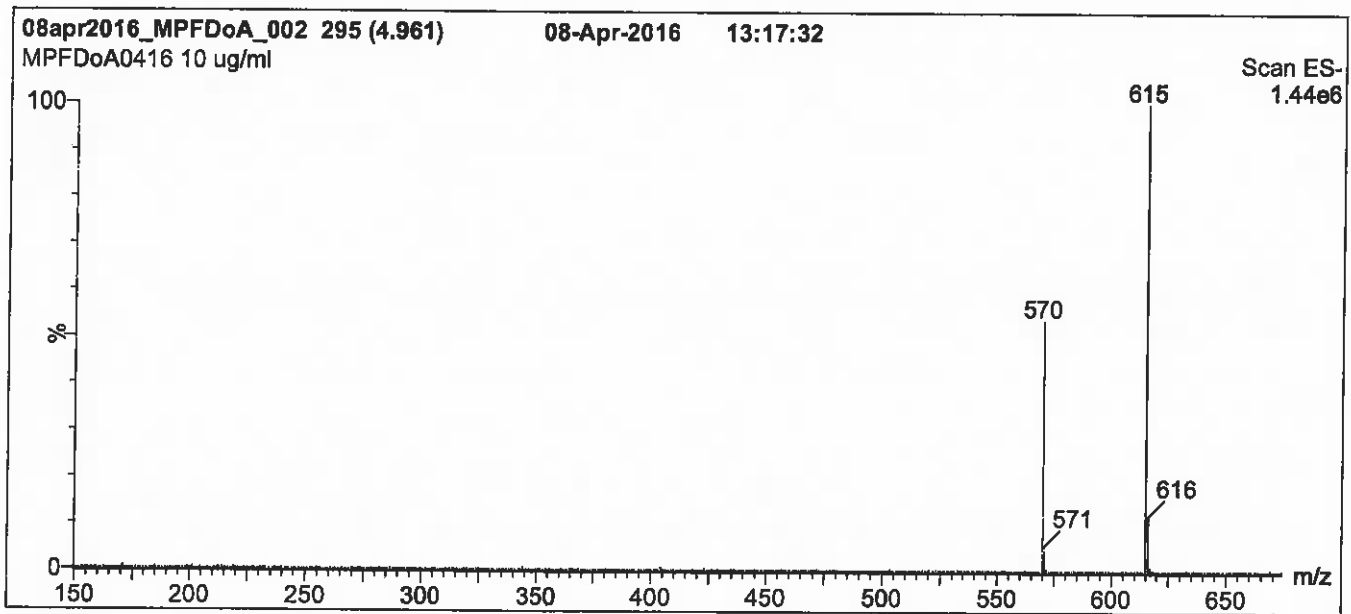
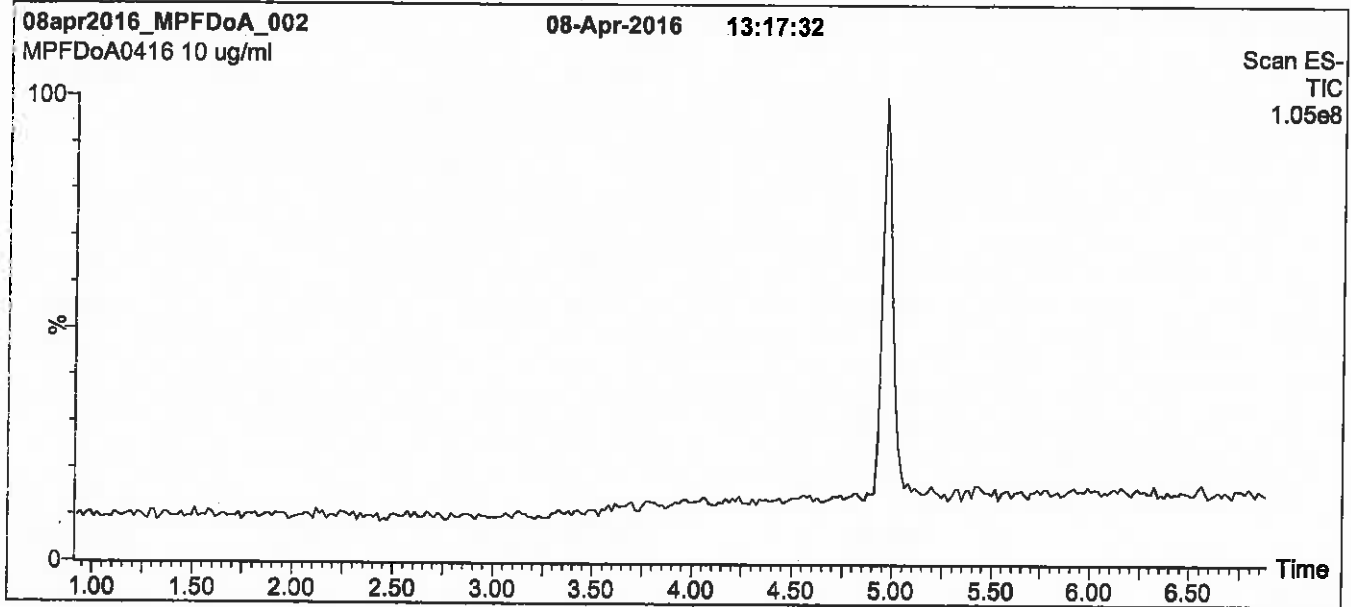
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFDoA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

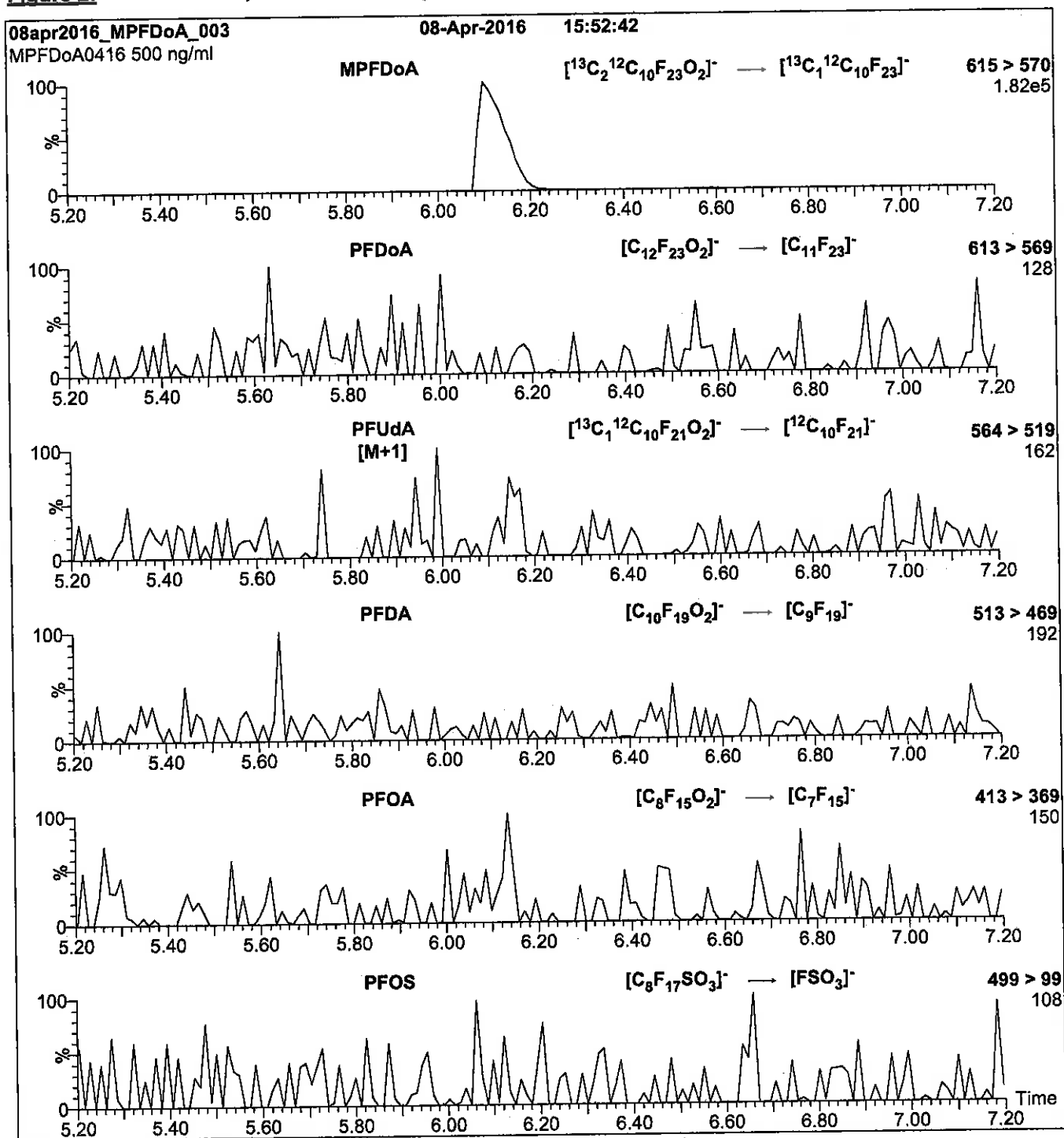
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFDoA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFDoA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 13

Reagent

LCMPFD_oA_00010

r: 5/3/17 SKW

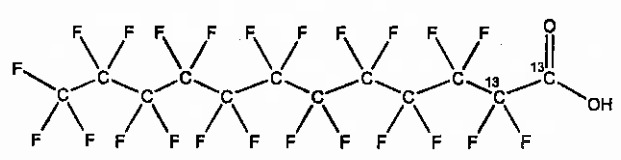


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA **LOT NUMBER:** MPFDoA0416
COMPOUND: Perfluoro-n-[1,2-¹³C₂]dodecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₀HF₂₃O₂ **MOLECULAR WEIGHT:** 616.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 04/08/2016
EXPIRY DATE: (mm/dd/yyyy) 04/08/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 04/15/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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LIMITED WARRANTY:

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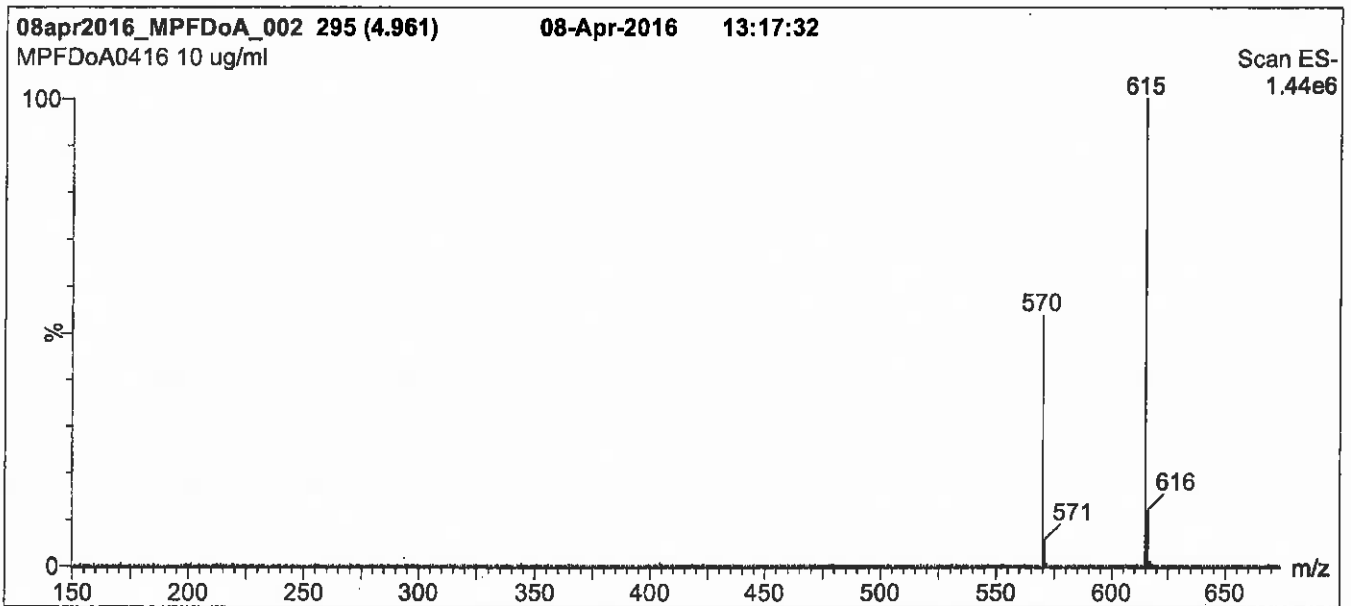
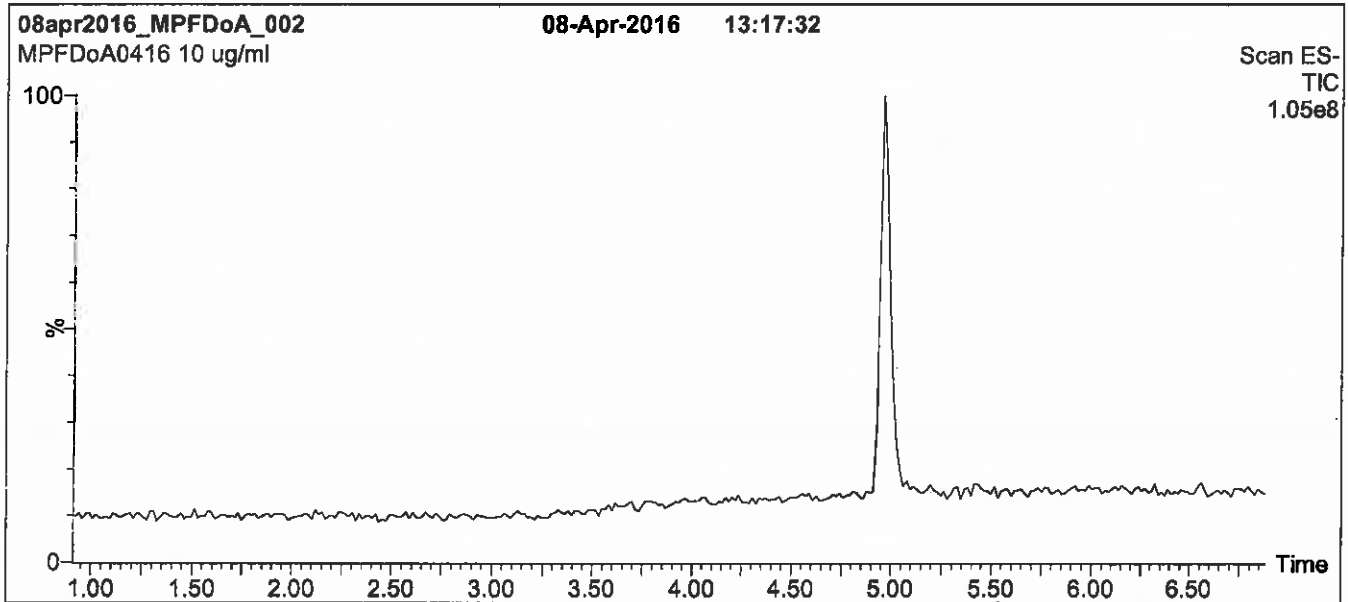
QUALITY MANAGEMENT:

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Figure 1: MPFDoA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

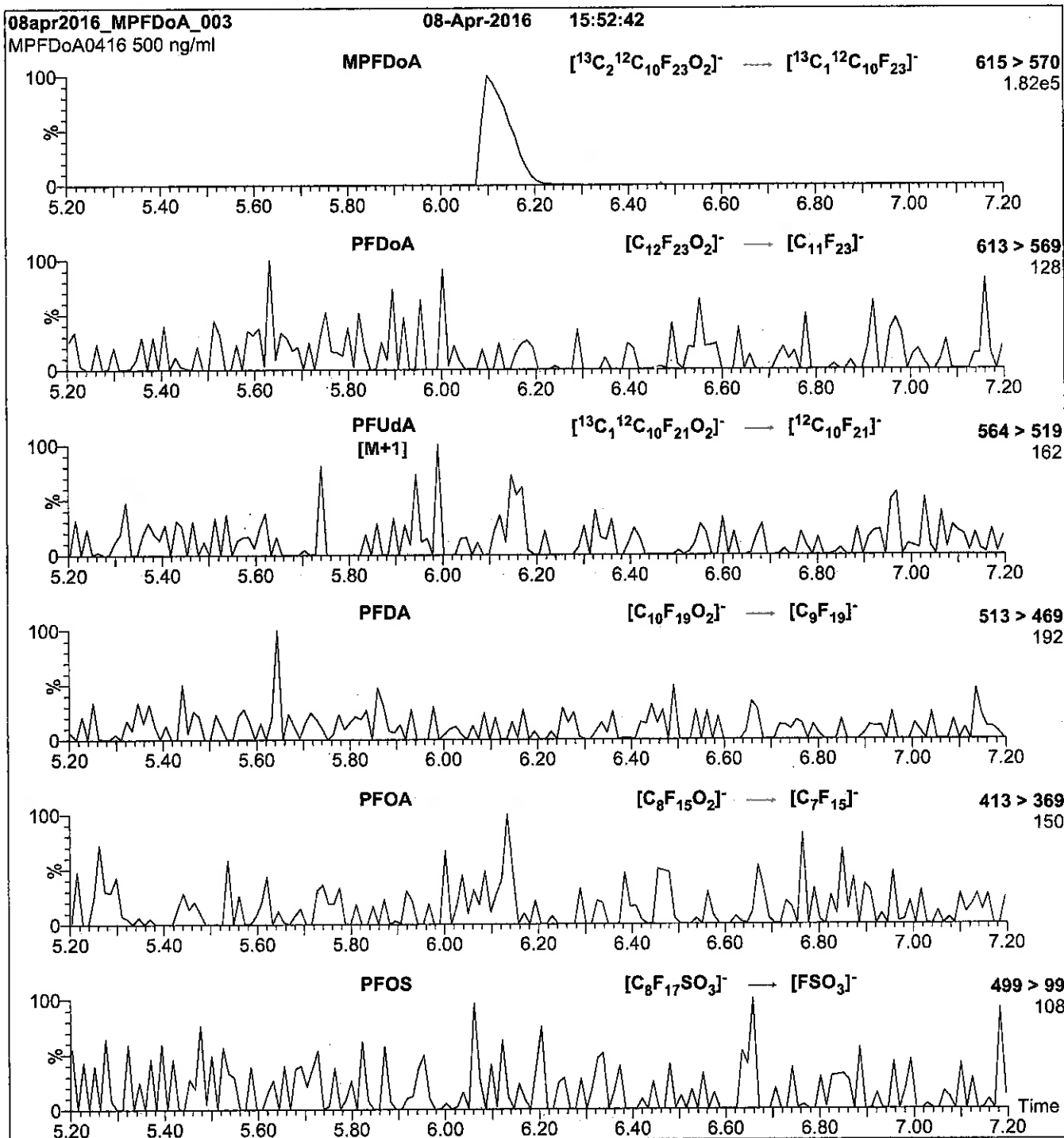
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 20.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFDoA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μl (500 ng/ml MPFDoA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
 (both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.24\text{e-}3$
 Collision Energy (eV) = 13

Reagent

LCMPFHxA_00014

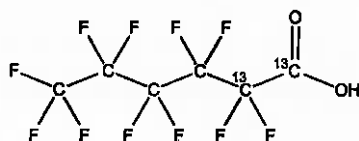


**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: MPFHxA **LOT NUMBER:** MPFHxA1116
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄HF₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/22/2016

ISOTOPIC PURITY: ≥99%¹³C
 (1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-hexanoic acid and ~ 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/13/2016
 (mm/dd/yyyy)

**Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com**

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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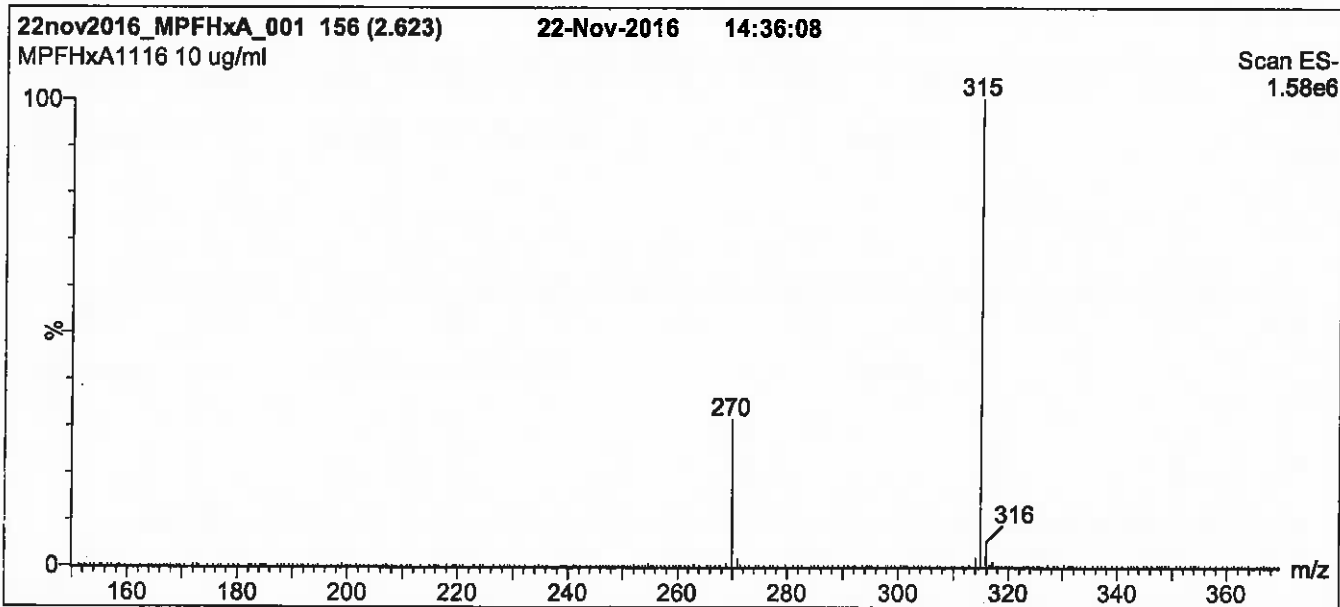
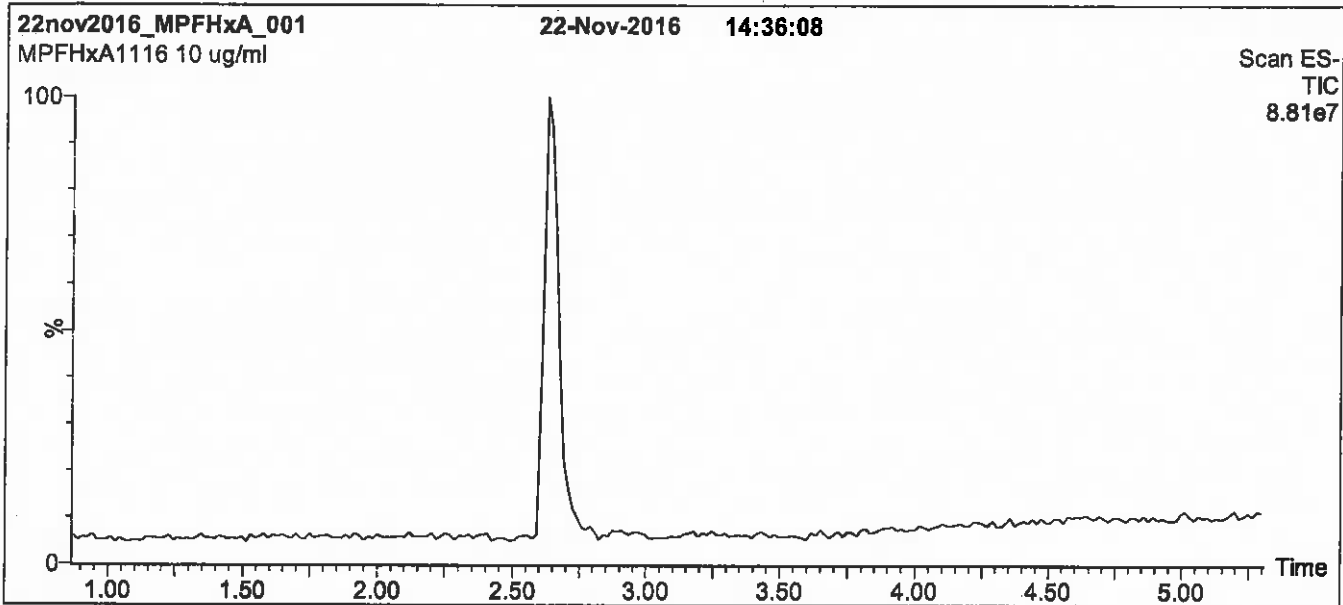
QUALITY MANAGEMENT:

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Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 40% (80:20 MeOH:ACN) / 60% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min
 before returning to initial conditions over 0.5 min.
 Time: 10 min

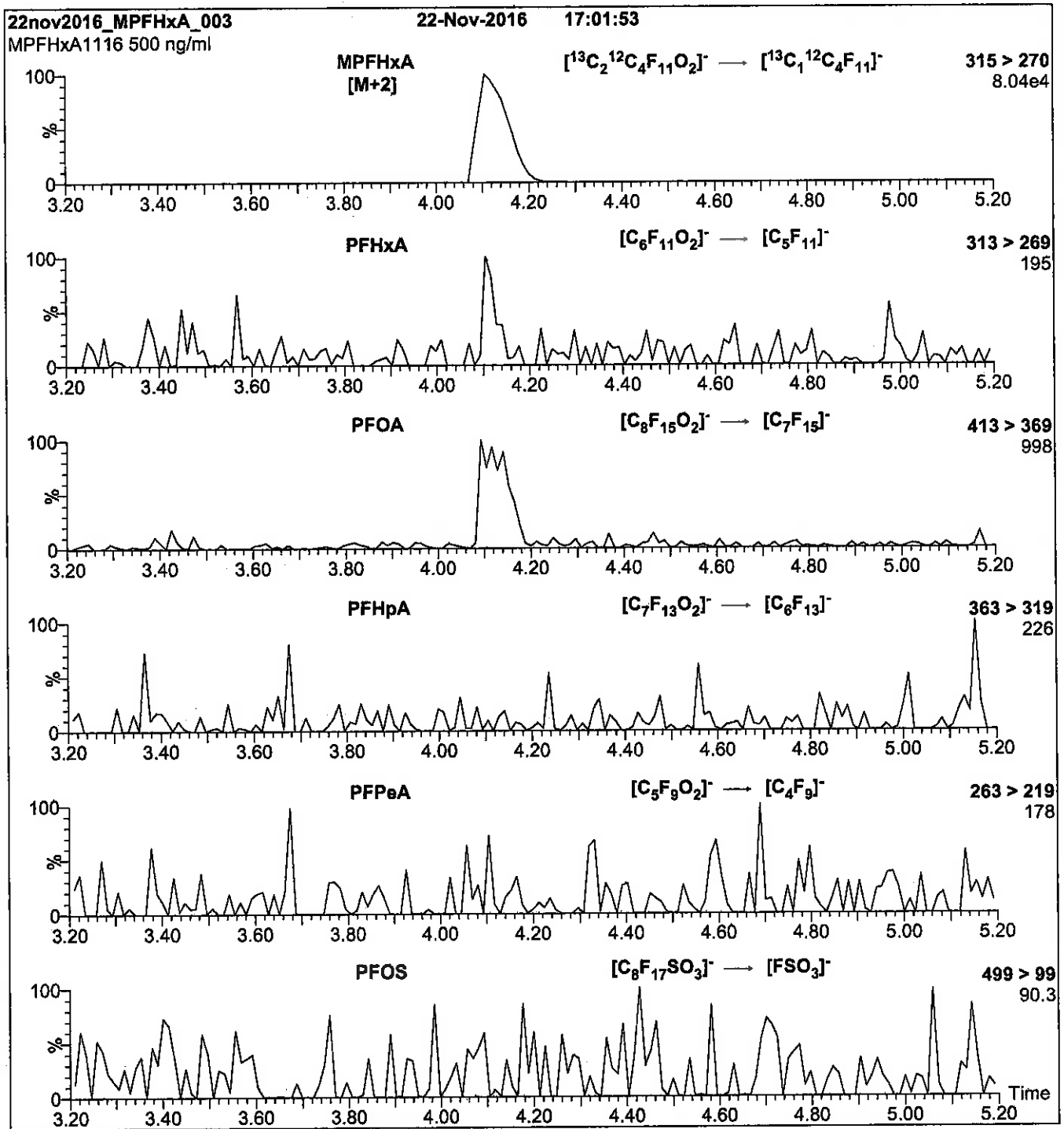
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 10

Reagent

LCMPFHxA_00016

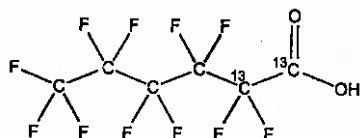
R: 5/31/17 SKV
S: 5/18/17 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexanoic acid
LOT NUMBER: MPFHxA1116
STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄HF₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place
MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99%¹³C
(1,2-¹³C₂)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-hexanoic acid and ~ 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/13/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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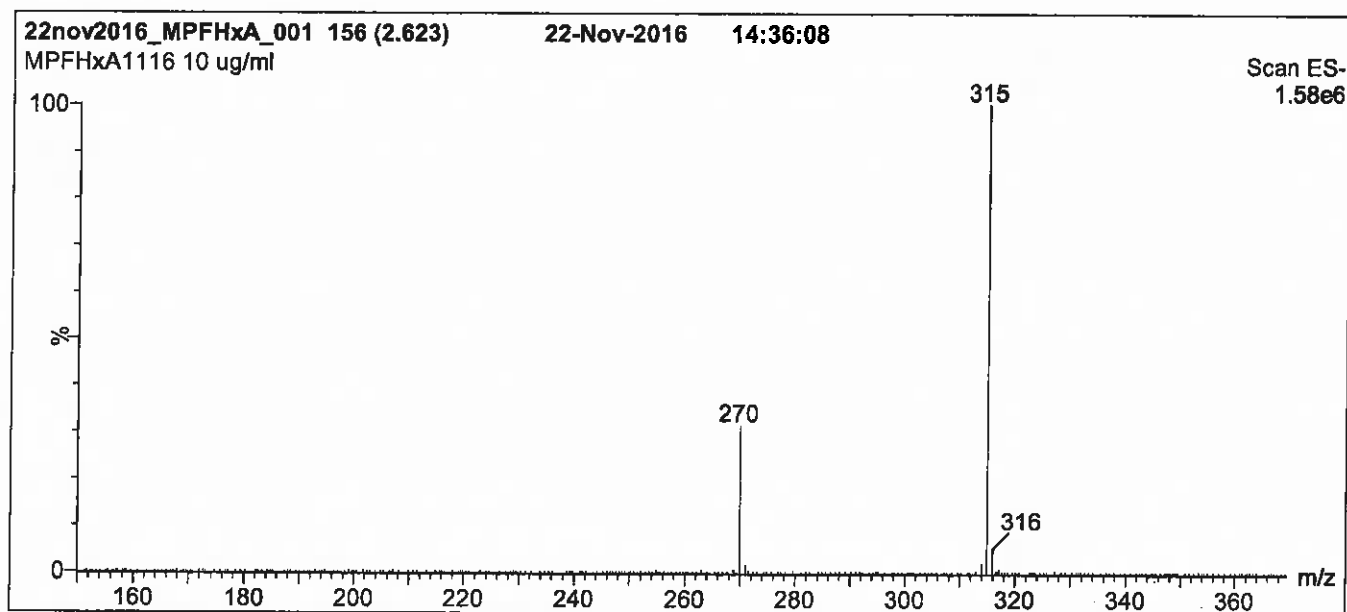
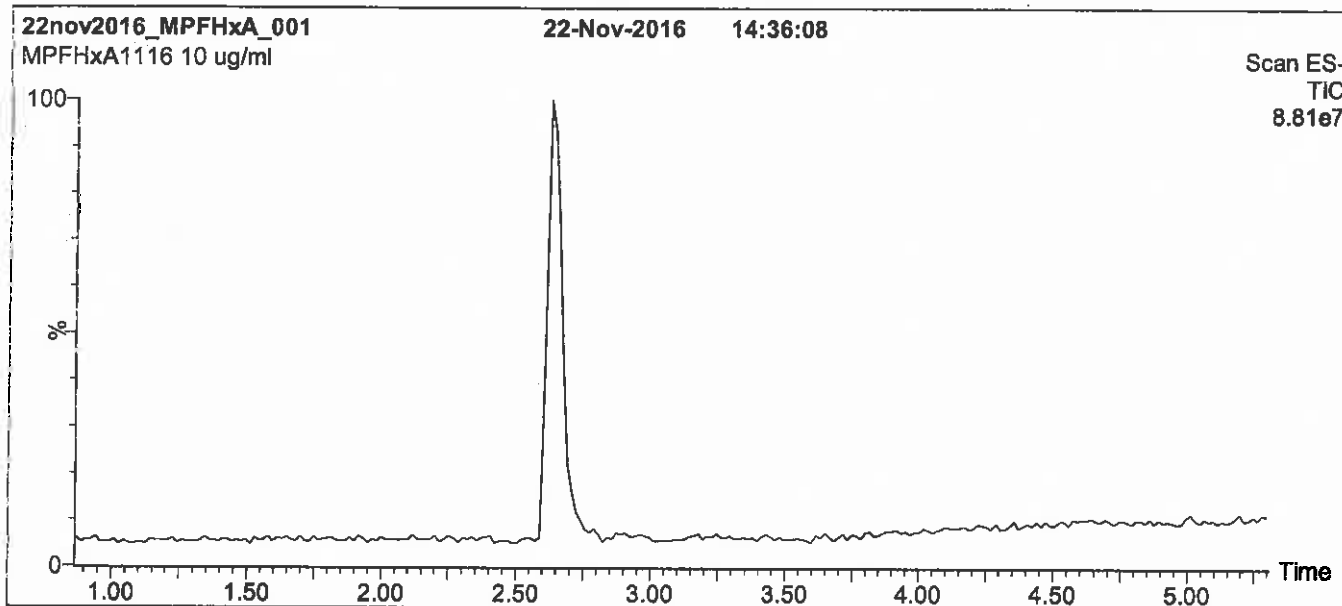
QUALITY MANAGEMENT:

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Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

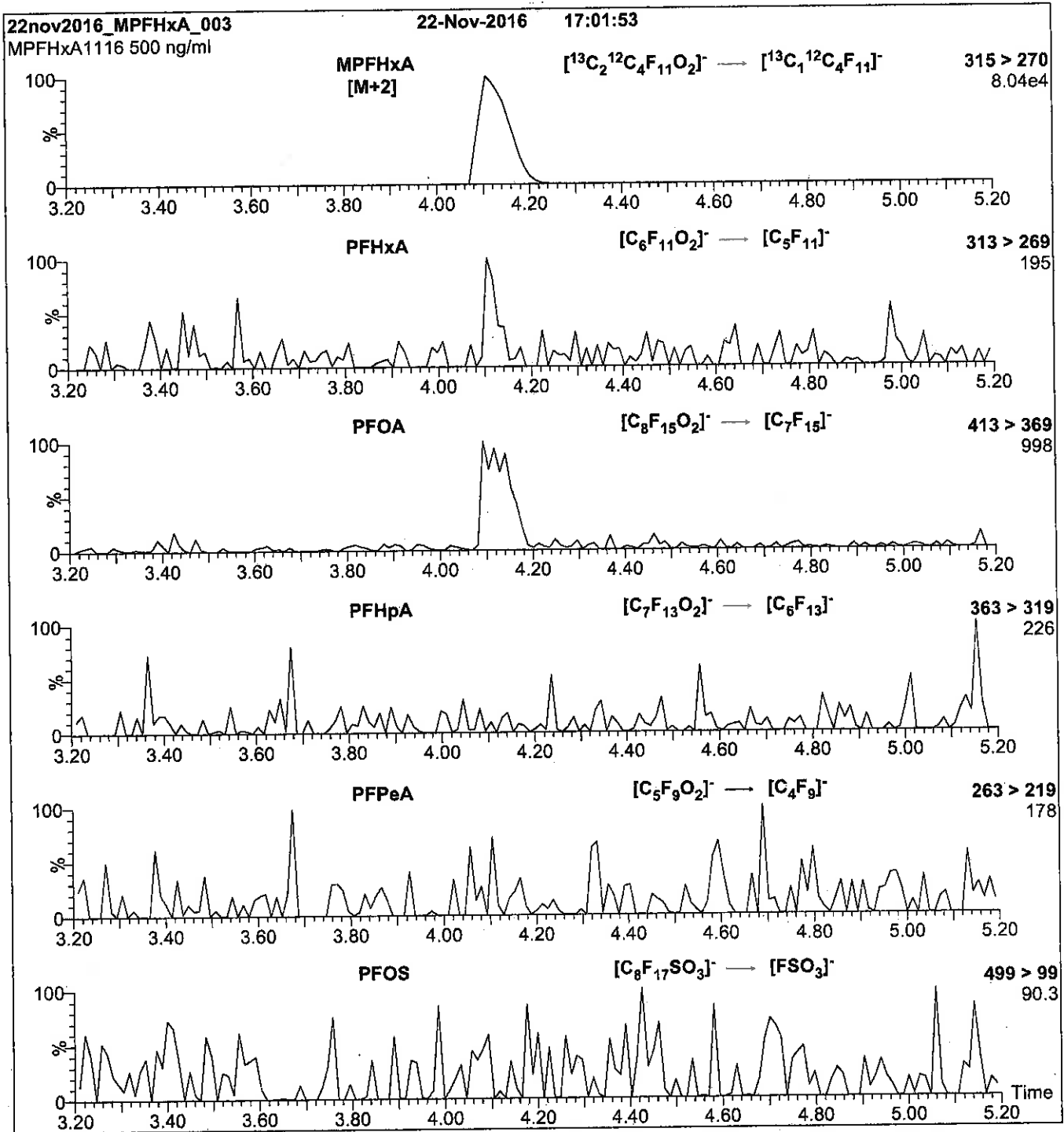
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
 Collision Energy (eV) = 10

Reagent

LCMPFHXS_00009

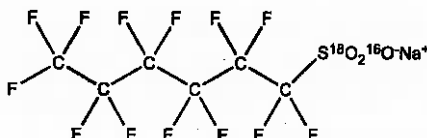


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS **LOT NUMBER:** MPFHxS1015
COMPOUND: Sodium perfluoro-1-hexane [$^{18}\text{O}_2$]sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $\text{C}_8\text{F}_{13}\text{S}^{18}\text{O}_2^{16}\text{ONa}$ **MOLECULAR WEIGHT:** 426.10
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt) **SOLVENT(S):** Methanol
 $47.3 \pm 2.4 \mu\text{g/ml}$ (MPFHxS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** >94% ($^{18}\text{O}_2$)
LAST TESTED: (mm/dd/yyyy) 10/23/2015
EXPIRY DATE: (mm/dd/yyyy) 10/23/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS ($\text{C}_8\text{F}_{13}\text{S}^{18}\text{O}_2^{16}\text{O}^-$) has been observed to be up to 10% lower than for PFHxS ($\text{C}_8\text{F}_{13}\text{S}^{16}\text{O}_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Due to the isotopic purity of the starting material ($^{18}\text{O}_2$ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim

Date: 10/28/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

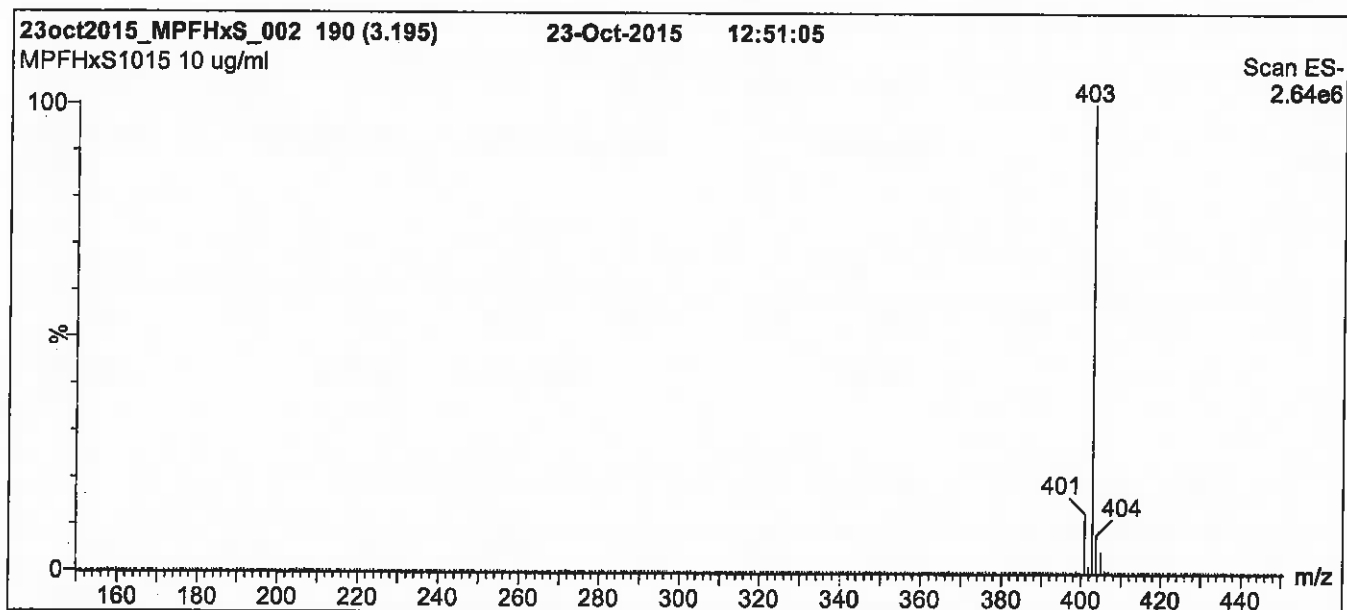
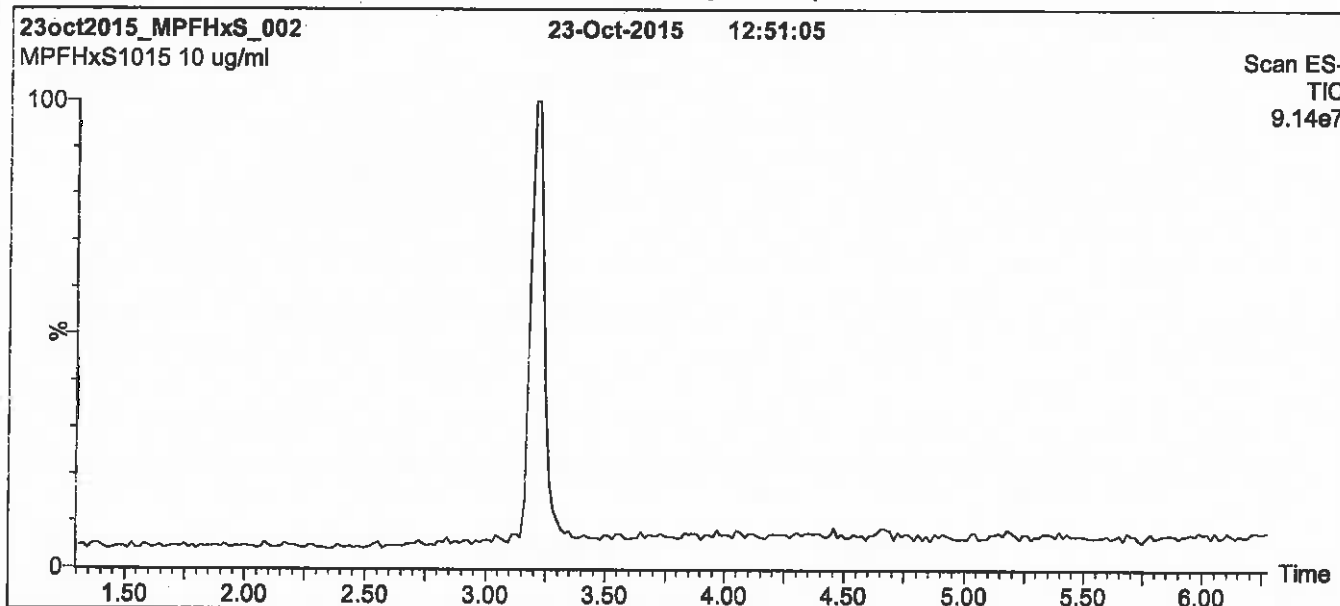
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFHxS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

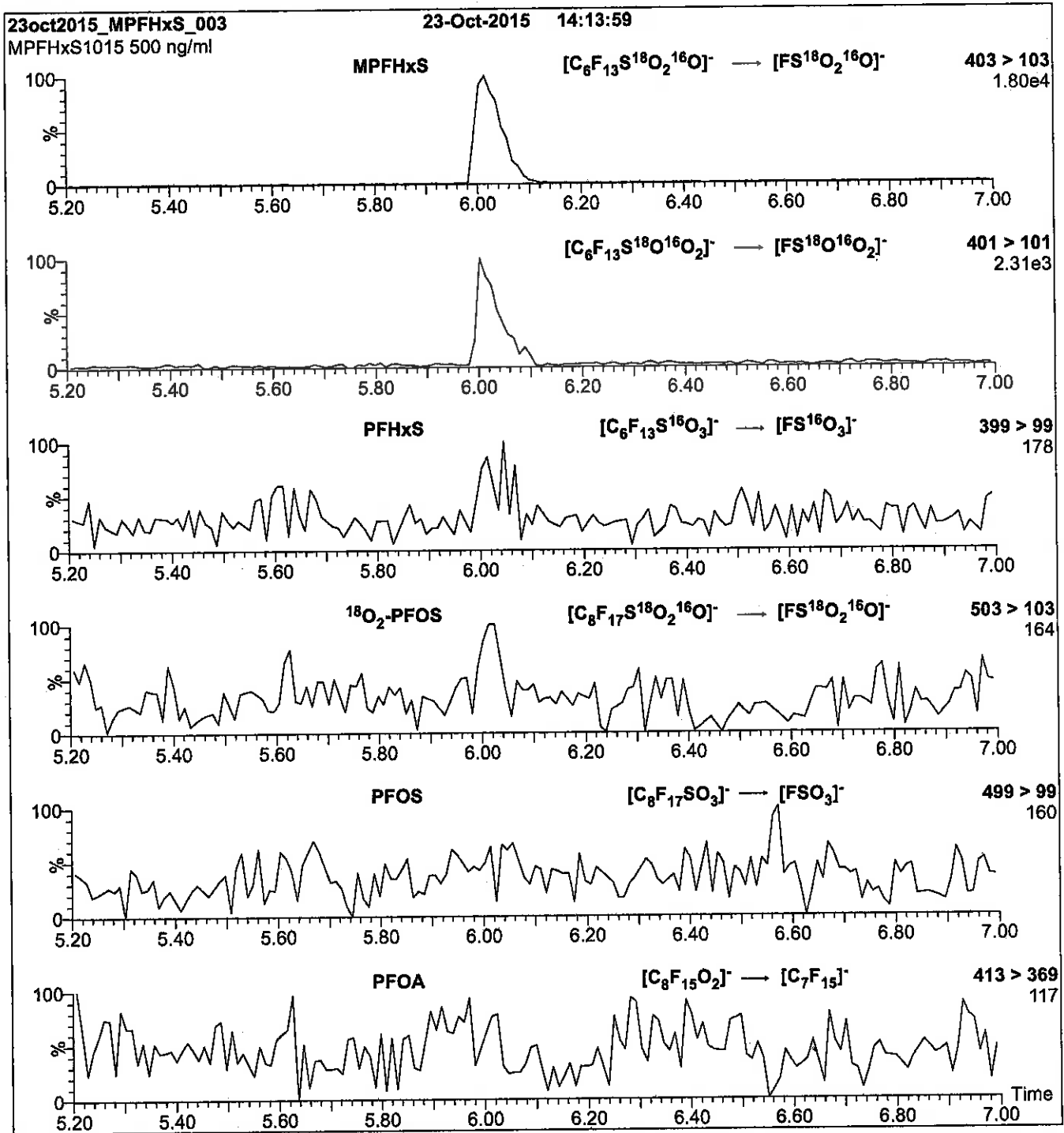
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFHxS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFHxS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

Reagent

LCMPFHXS_00010

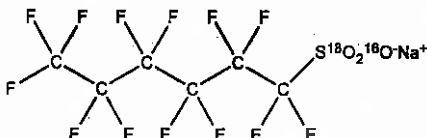


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS **LOT NUMBER:** MPFHxS0217
COMPOUND: Sodium perfluoro-1-hexane [¹⁸O₂]sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₆F₁₃S¹⁸O₂¹⁶O⁻Na⁺ **MOLECULAR WEIGHT:** 426.10
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.3 ± 2.4 µg/ml (MPFHxS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** >94% (¹⁸O₂)
LAST TESTED: (mm/dd/yyyy) 02/17/2017
EXPIRY DATE: (mm/dd/yyyy) 02/17/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

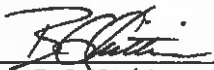
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS (C₆F₁₃S¹⁸O₂¹⁶O⁻) has been observed to be up to 10% lower than for PFHxS (C₆F₁₃S¹⁶O₃⁻) when both compounds are injected together. This difference may vary between instruments.
- Contains ~ 1.0% of sodium perfluoro-1-octane [¹⁸O₂]sulfonate (¹⁸O₂-PFOS).
- Due to the isotopic purity of the starting material (¹⁸O₂ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 03/02/2017
 B.G. Chittim (mm/dd/yyyy)

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

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EXPIRY DATE / PERIOD OF VALIDITY:

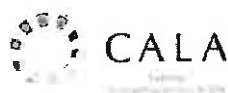
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

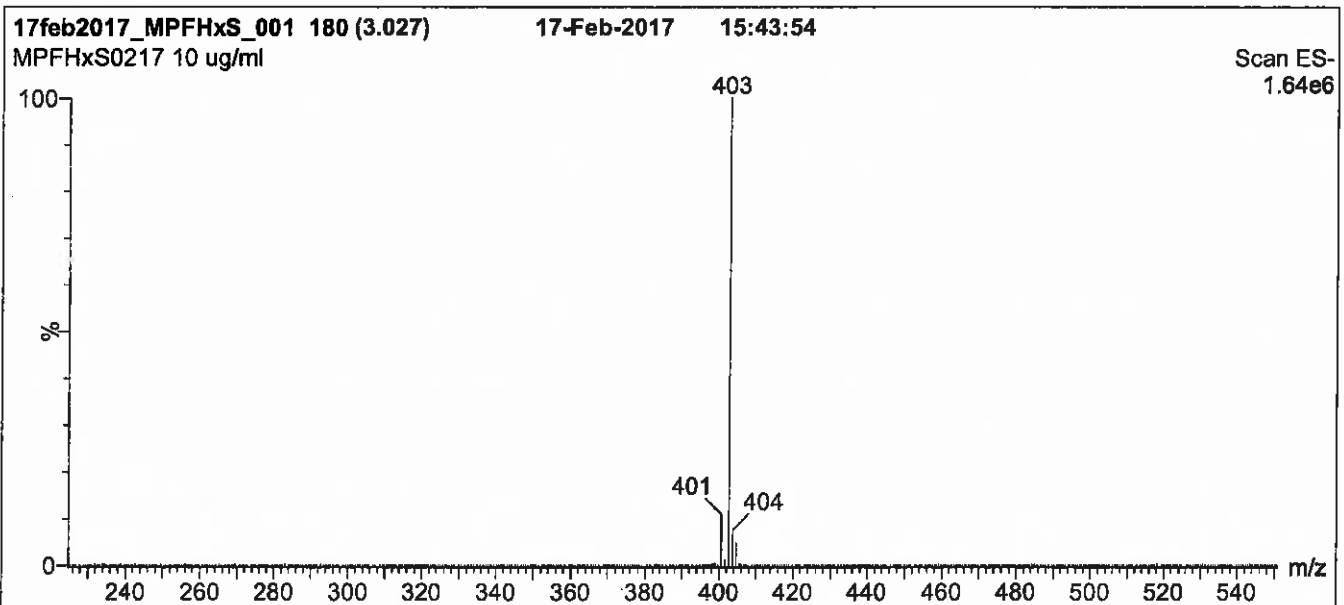
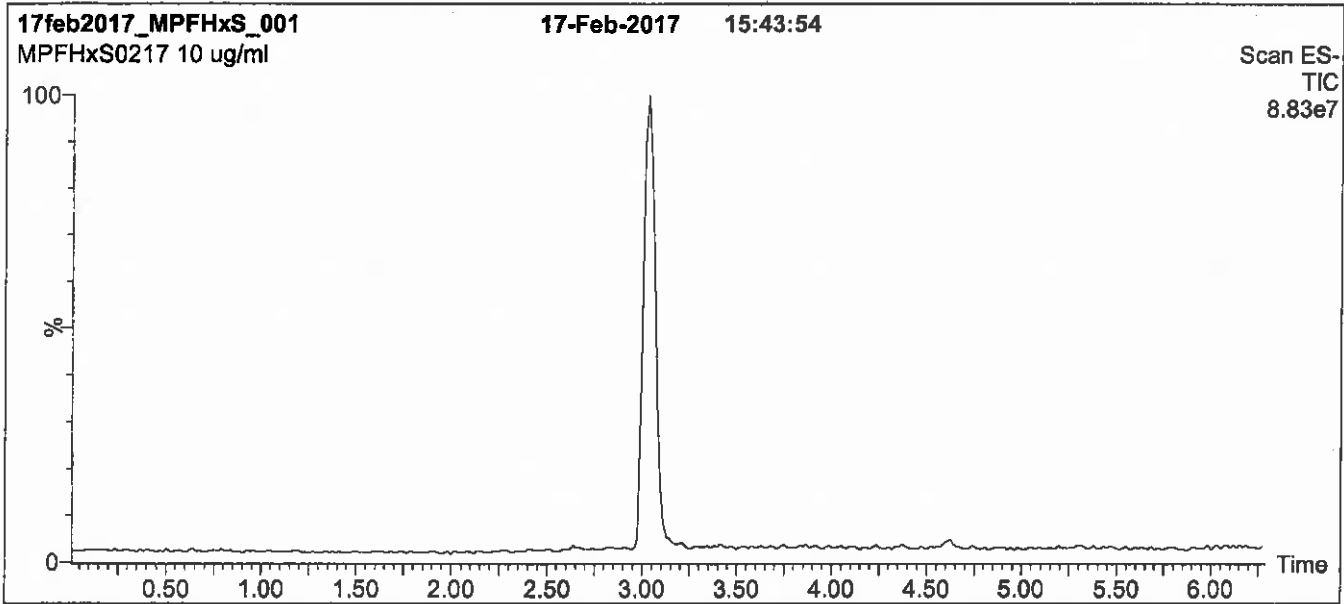
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFHxS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

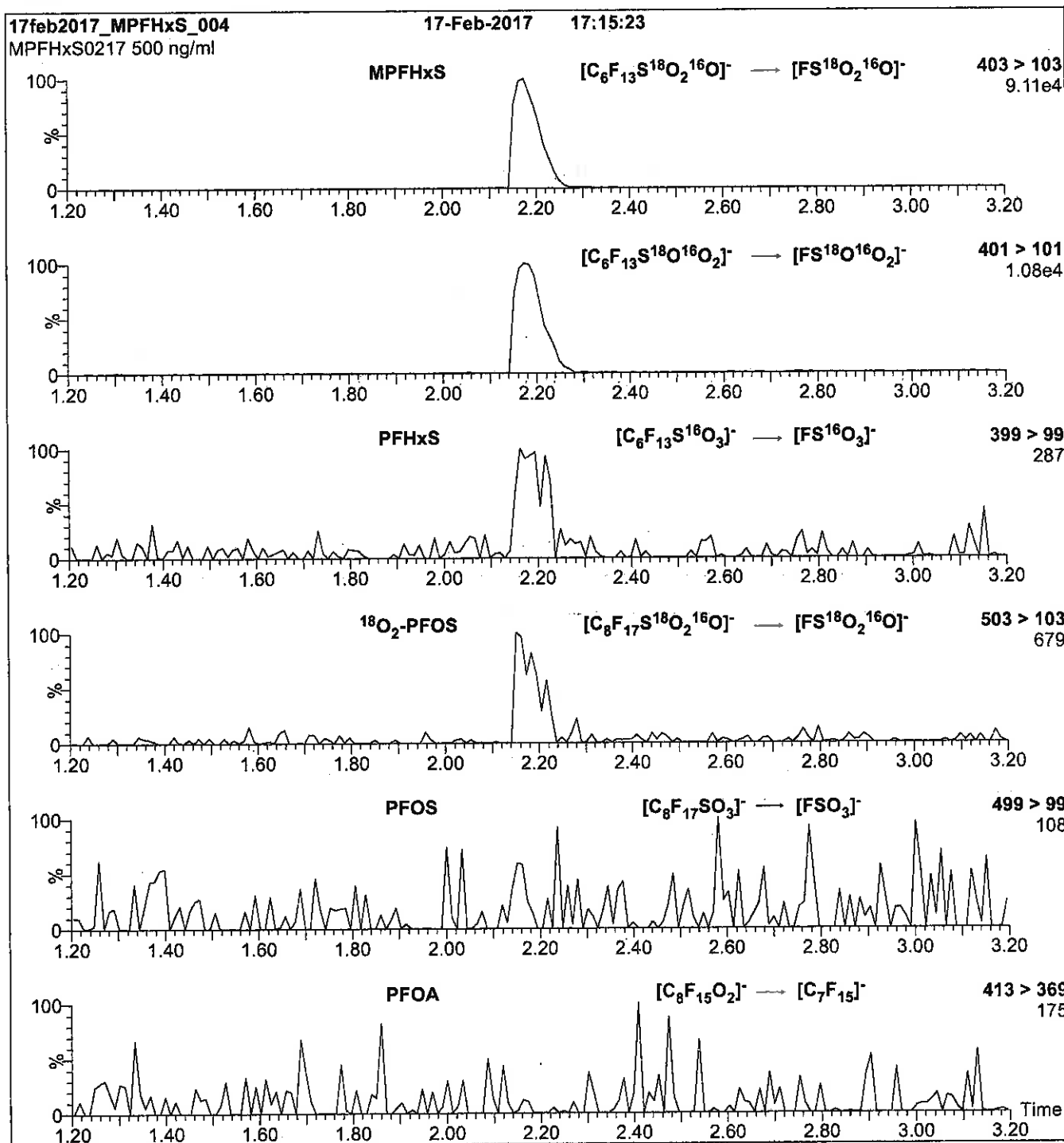
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFHxS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFHxS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 30

Reagent

LCMPFNA_00009

P: 3/17/17 SKV



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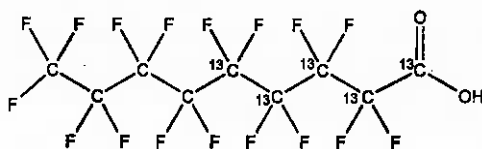
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFNA
COMPOUND: Perfluoro-n-[1,2,3,4,5-¹³C₅]nonanoic acid

LOT NUMBER: MPFNA0916

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₅¹²C₄HF₁₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 469.04

SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ¹³C
(1,2,3,4,5-¹³C₅)

LAST TESTED: (mm/dd/yyyy) 09/30/2016

EXPIRY DATE: (mm/dd/yyyy) 09/30/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 10/11/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

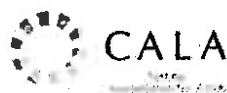
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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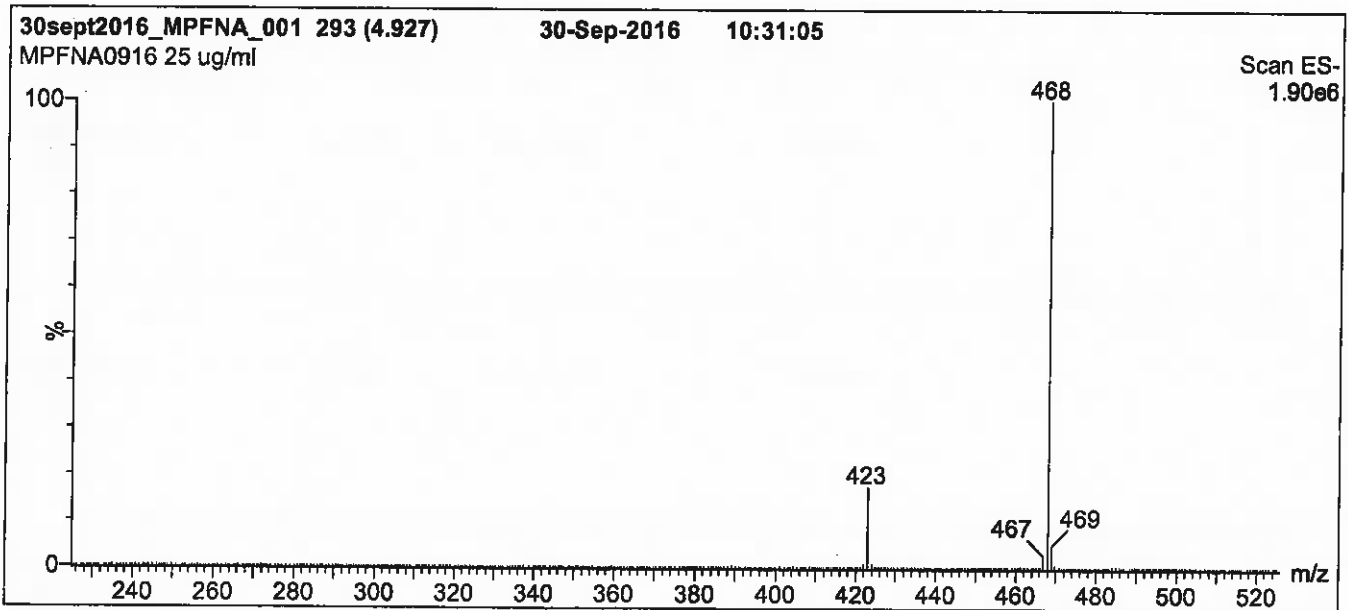
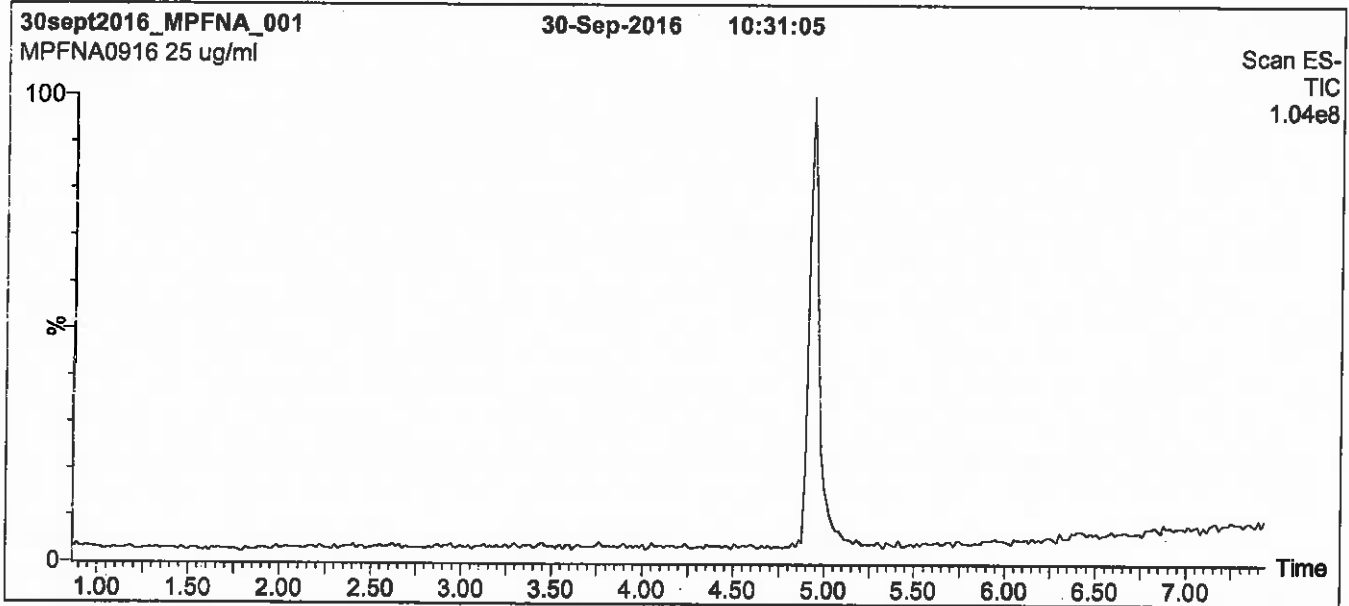
QUALITY MANAGEMENT:

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Figure 1: MPFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

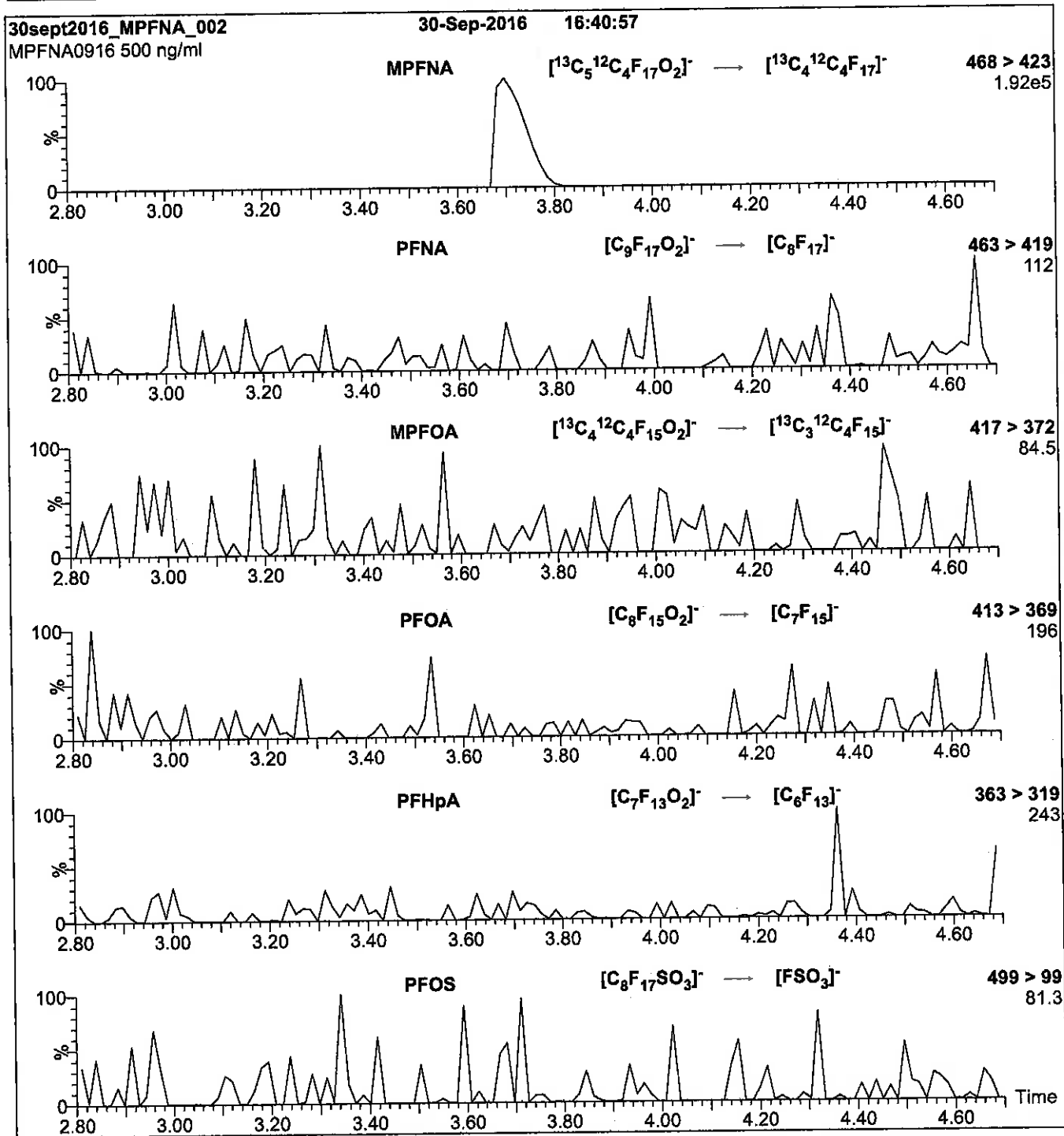
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11

Reagent

LCMPFNA_00010

r: 5/3/19 SA



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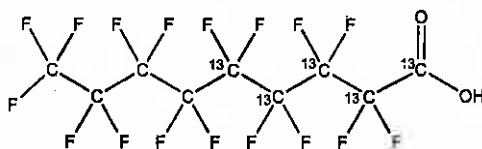
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFNA
COMPOUND: Perfluoro-n-[1,2,3,4,5-¹³C₅]nonanoic acid

LOT NUMBER: MPFNA0916

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₅¹²C₄HF₁₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 469.04

SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99%¹³C

LAST TESTED: (mm/dd/yyyy) 09/30/2016

EXPIRY DATE: (mm/dd/yyyy) 09/30/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

(1,2,3,4,5-¹³C₅)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:

B.G. Chittim

Date: 10/11/2016
(mm/dd/yyyy)

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Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

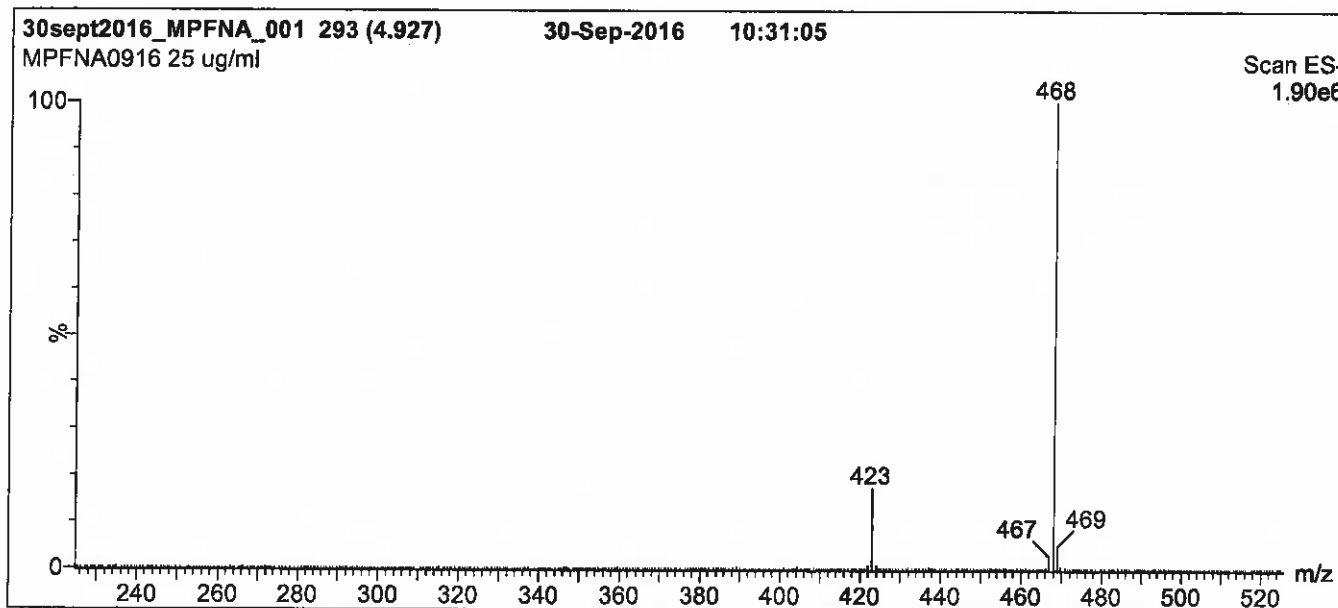
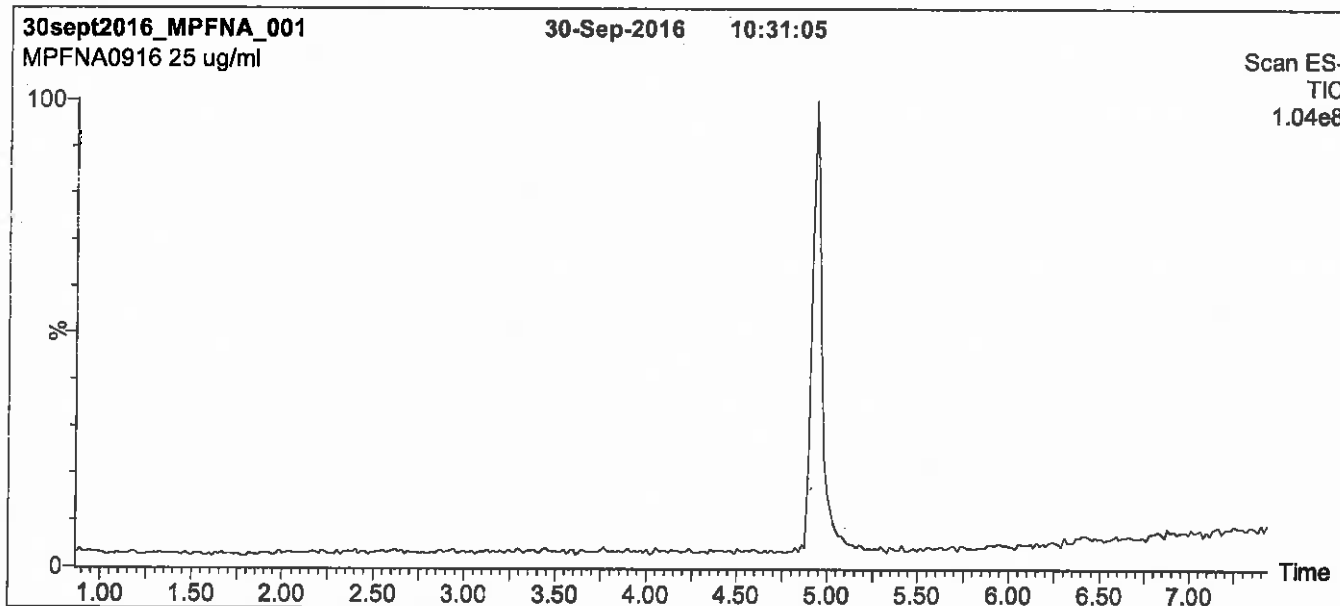
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: MPFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

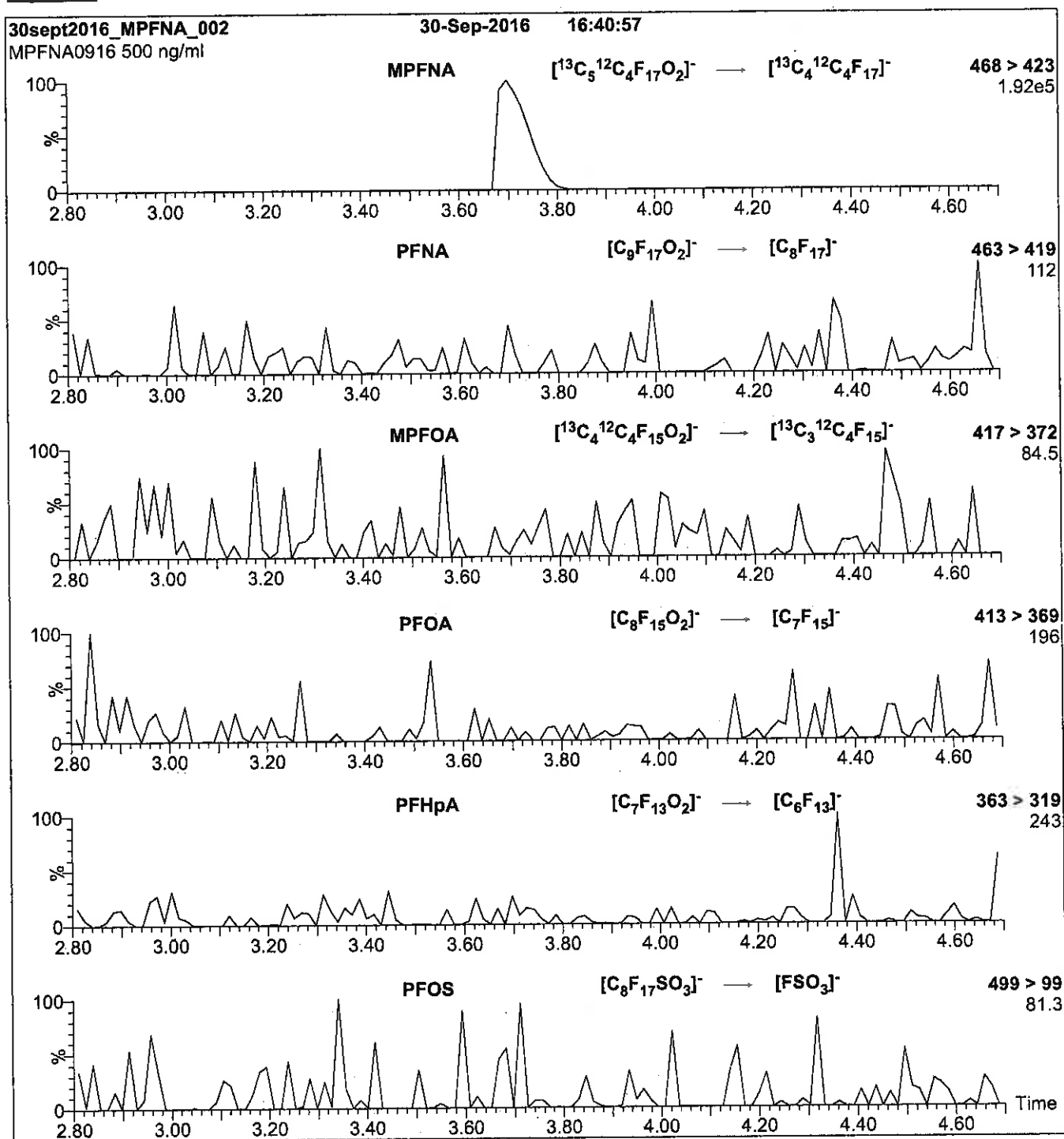
Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm
 Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
 Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00013

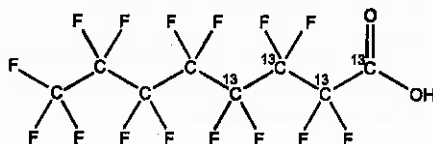
**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** MPFOA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]octanoic acid**LOT NUMBER:** MPFOA1016**STRUCTURE:****CAS #:** Not available**MOLECULAR FORMULA:** $^{13}\text{C}_4^{12}\text{C}_4\text{HF}_{16}\text{O}_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **MOLECULAR WEIGHT:** 418.04
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: $\geq 99\%$ ^{13}C
(1,2,3,4- $^{13}\text{C}_4$)**CHEMICAL PURITY:** >98%**LAST TESTED:** (mm/dd/yyyy) 10/18/2016**EXPIRY DATE:** (mm/dd/yyyy) 10/18/2021**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. ChittimDate: 10/19/2016
(mm/dd/yyyy)Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

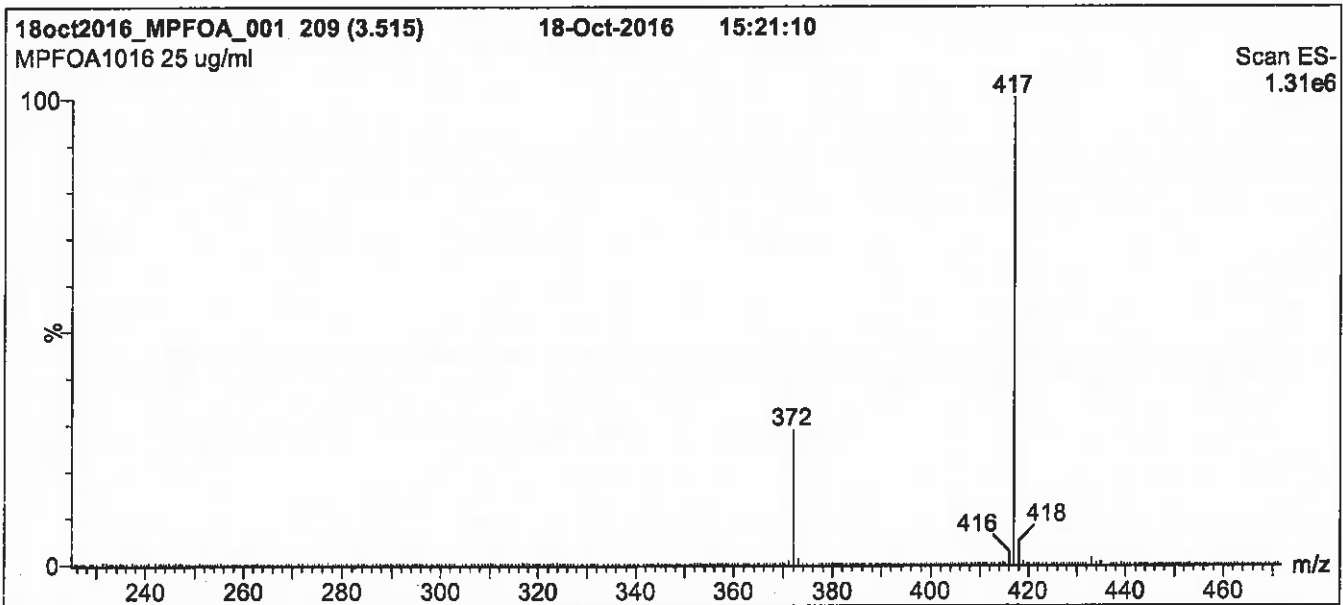
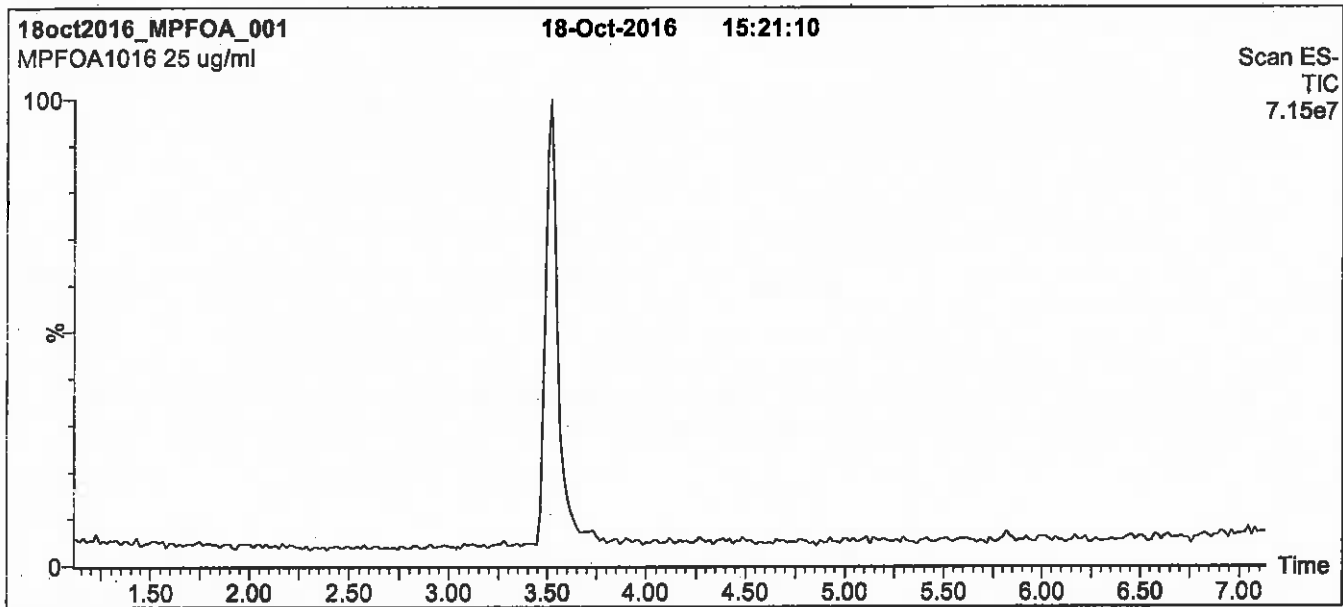
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 55% (80:20 MeOH:ACN) / 45% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

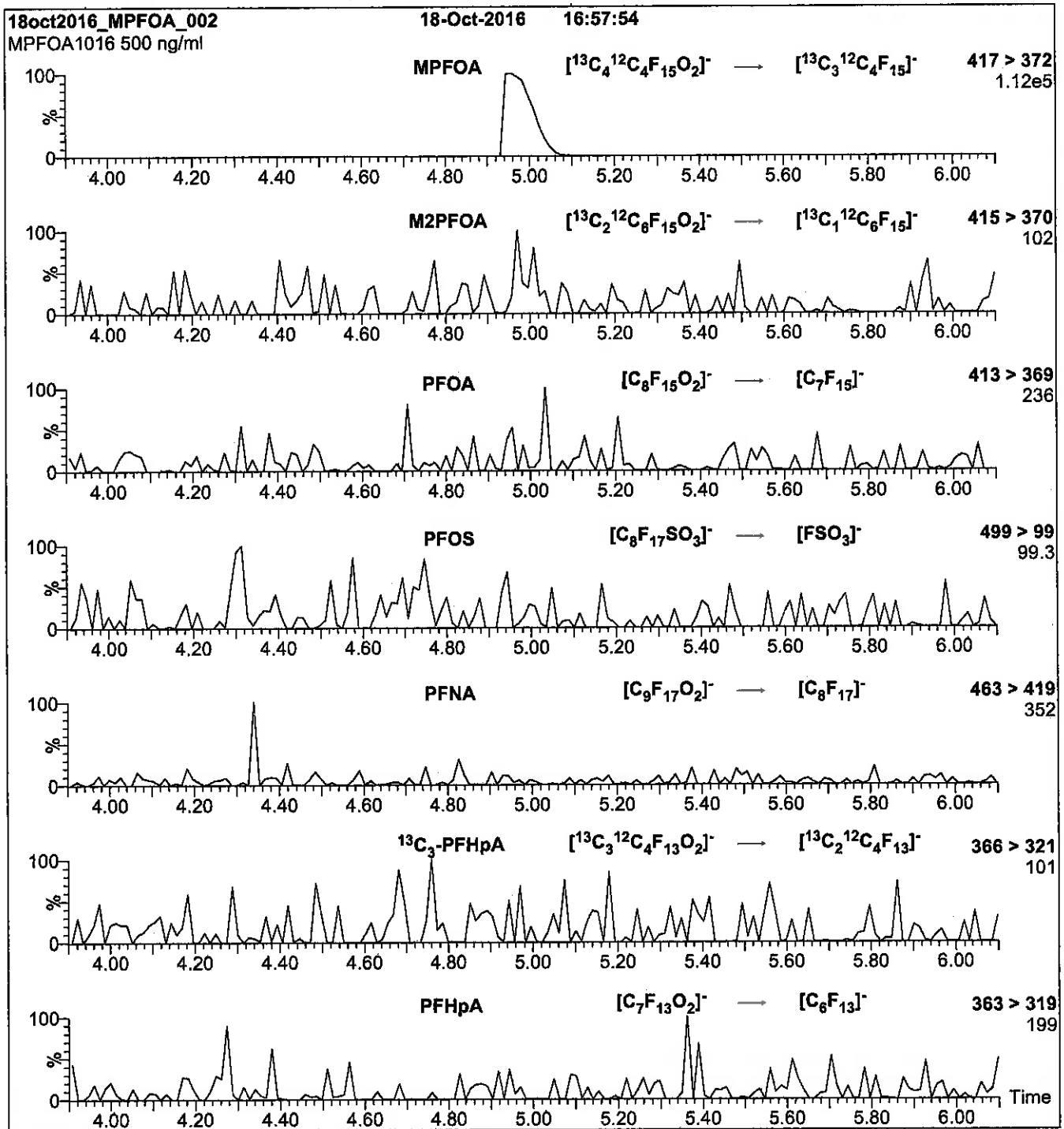
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 10

Reagent

LCMPFOA_00014



WELLINGTON LABORATORIES

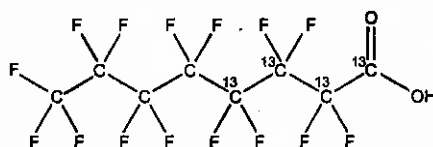
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]octanoic acid

LOT NUMBER: MPFOA0417

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}\text{C}_4^{12}\text{C}_4\text{HF}_{15}\text{O}_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 418.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/12/2017
EXPIRY DATE: (mm/dd/yyyy) 04/12/2022

ISOTOPIC PURITY: $\geq 99\%$ ¹³C
(1,2,3,4-¹³C₄)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 04/28/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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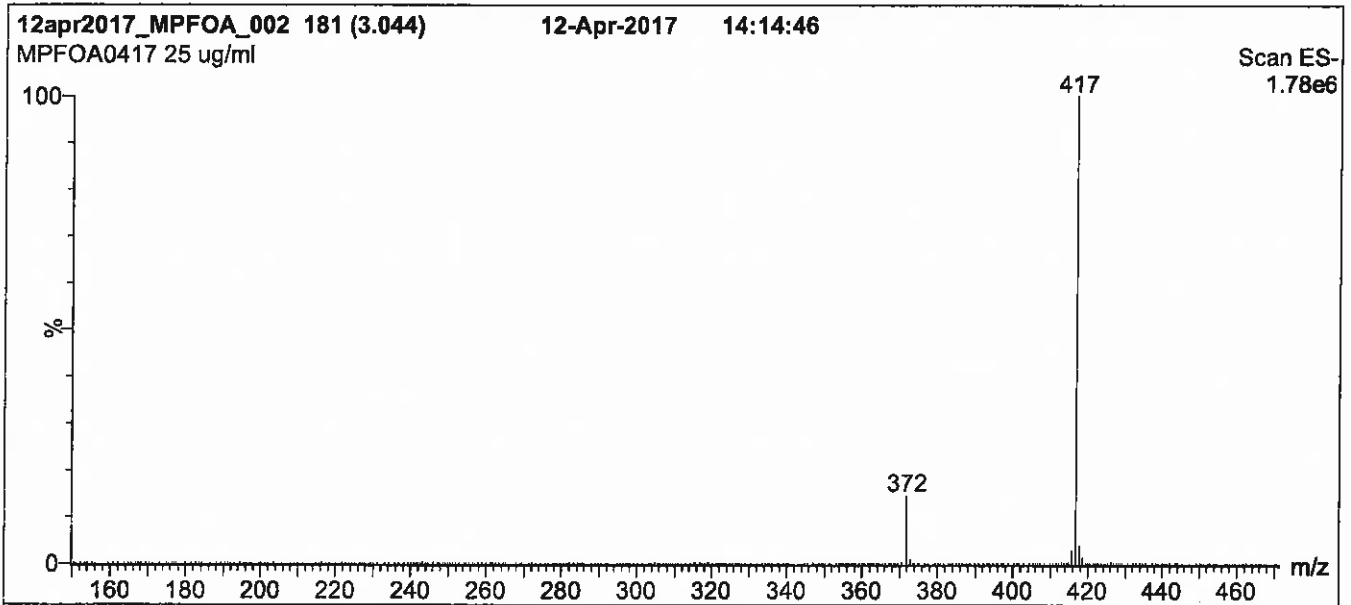
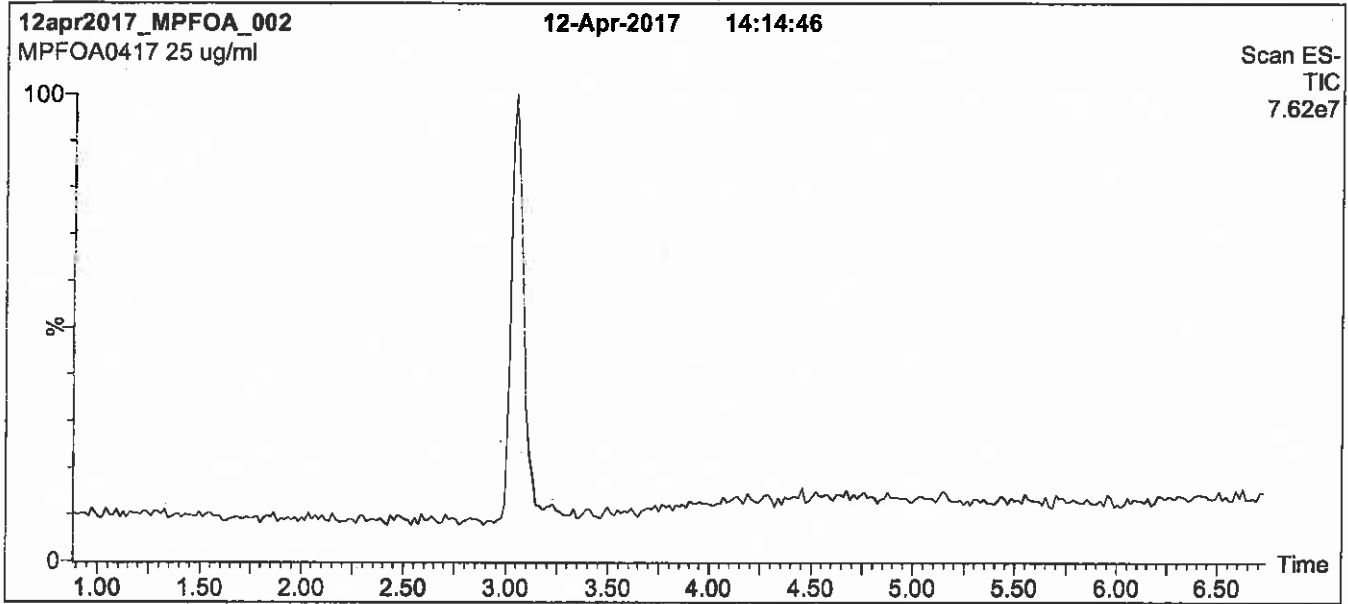
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

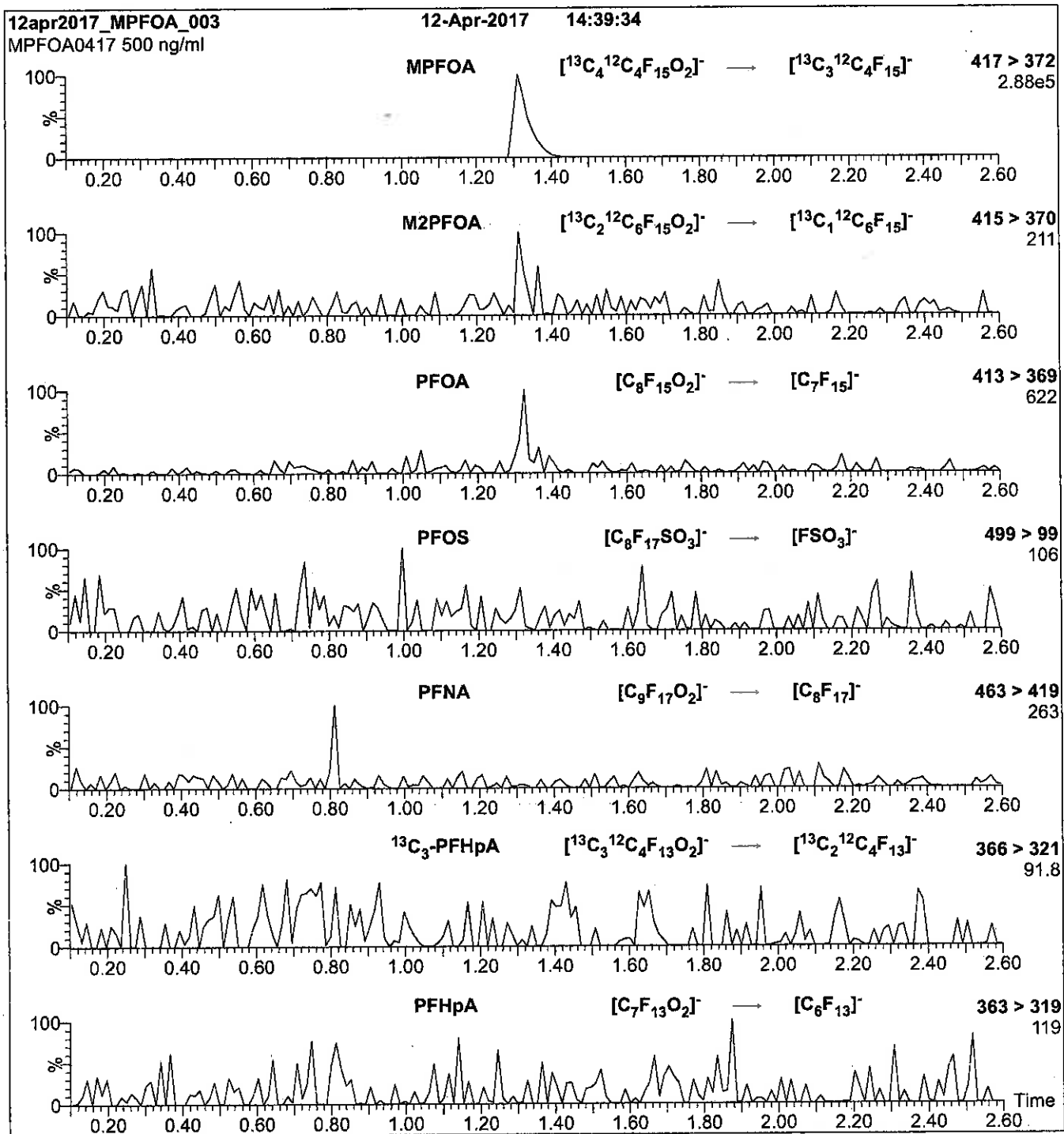
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.46\text{e-}3$
Collision Energy (eV) = 10

Reagent

LCMPFOS_00020

n: 3k117 stv

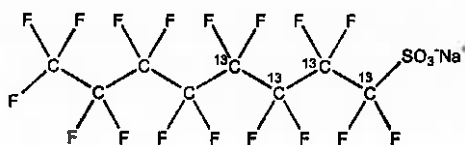


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1216
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



| | | | |
|----------------------------------|--|--------------------------|--|
| MOLECULAR FORMULA: | ¹³ C ₄ ¹² C ₄ F ₁₇ SO ₃ Na | MOLECULAR WEIGHT: | 526.08 |
| CONCENTRATION: | 50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion) | SOLVENT(S): | Methanol |
| CHEMICAL PURITY: | >98% | ISOTOPIC PURITY: | ≥99% ¹³ C (1,2,3,4- ¹³ C ₄) |
| LAST TESTED: (mm/dd/yyyy) | 12/12/2016 | | |
| EXPIRY DATE: (mm/dd/yyyy) | 12/12/2021 | | |
| RECOMMENDED STORAGE: | Store ampoule in a cool, dark place | | |


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 12/14/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HOMOGENEITY:

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LIMITED WARRANTY:

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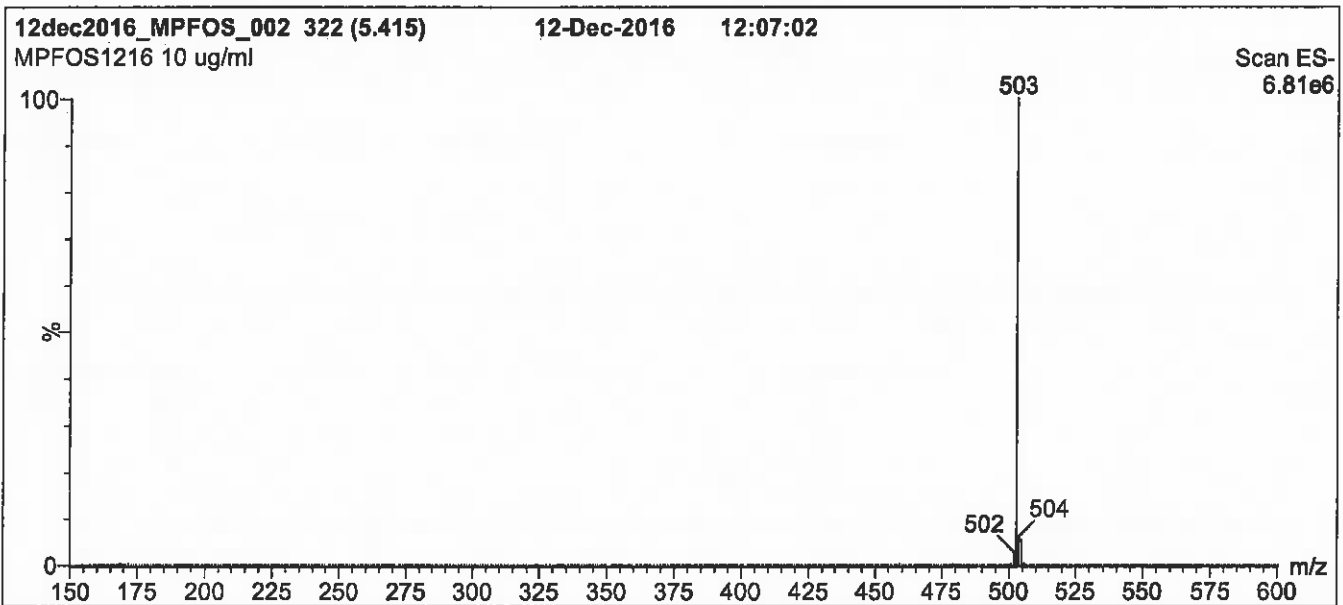
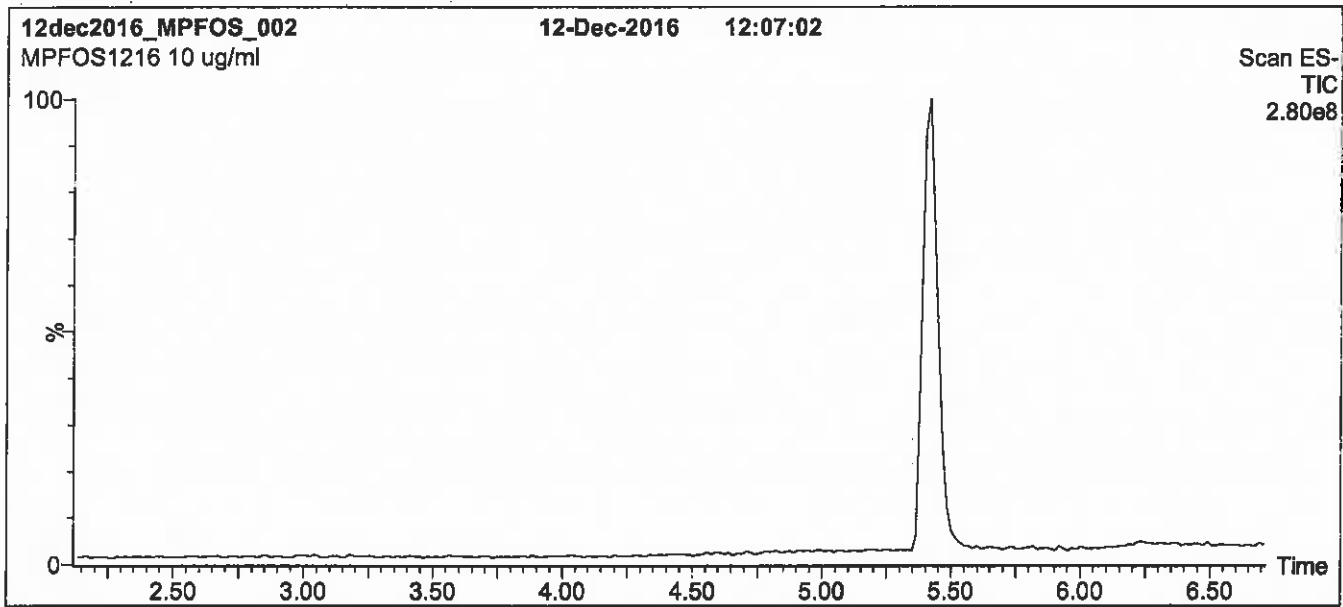
QUALITY MANAGEMENT:

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Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

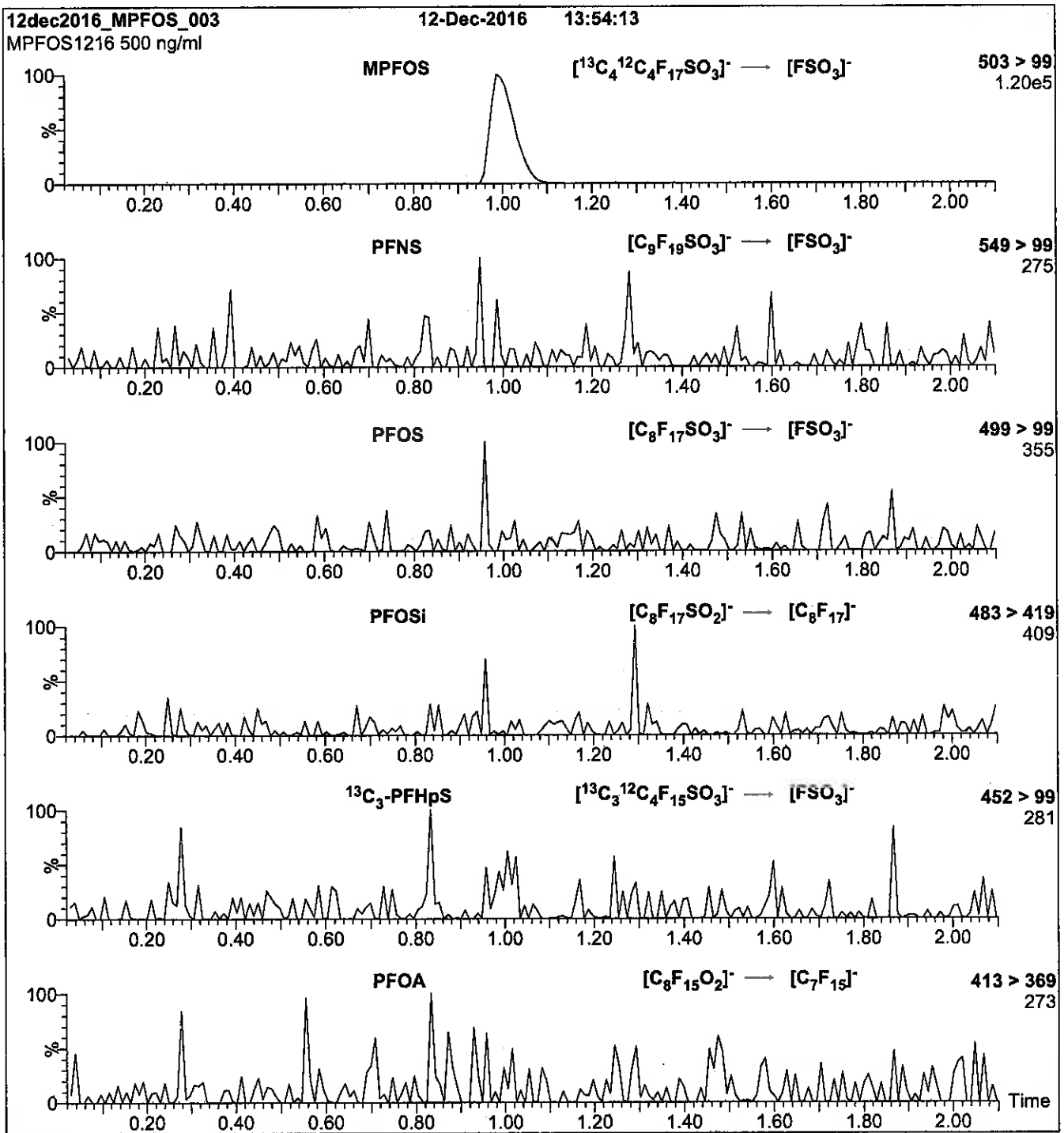
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFOS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 40

Reagent

LCMPFOS_00022

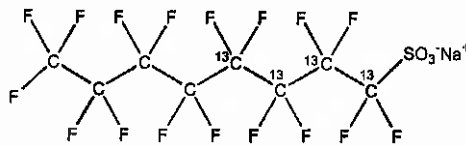


**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1216
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



| | | | |
|----------------------------------|--|--------------------------|--|
| MOLECULAR FORMULA: | ¹³ C ₄ ¹² C ₄ F ₁₇ SO ₃ Na | MOLECULAR WEIGHT: | 526.08 |
| CONCENTRATION: | 50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion) | SOLVENT(S): | Methanol |
| CHEMICAL PURITY: | >98% | ISOTOPIC PURITY: | ≥99% ¹³ C (1,2,3,4- ¹³ C ₄) |
| LAST TESTED: (mm/dd/yyyy) | 12/12/2016 | | |
| EXPIRY DATE: (mm/dd/yyyy) | 12/12/2021 | | |
| RECOMMENDED STORAGE: | Store ampoule in a cool, dark place | | |


DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 12/14/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

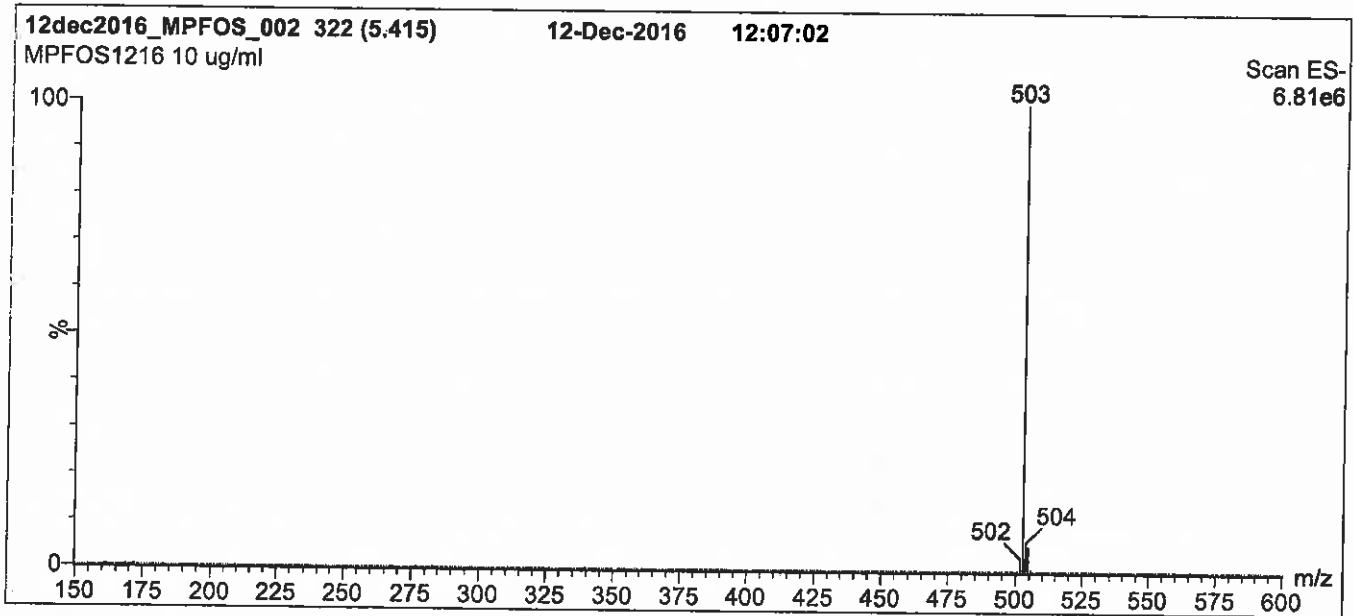
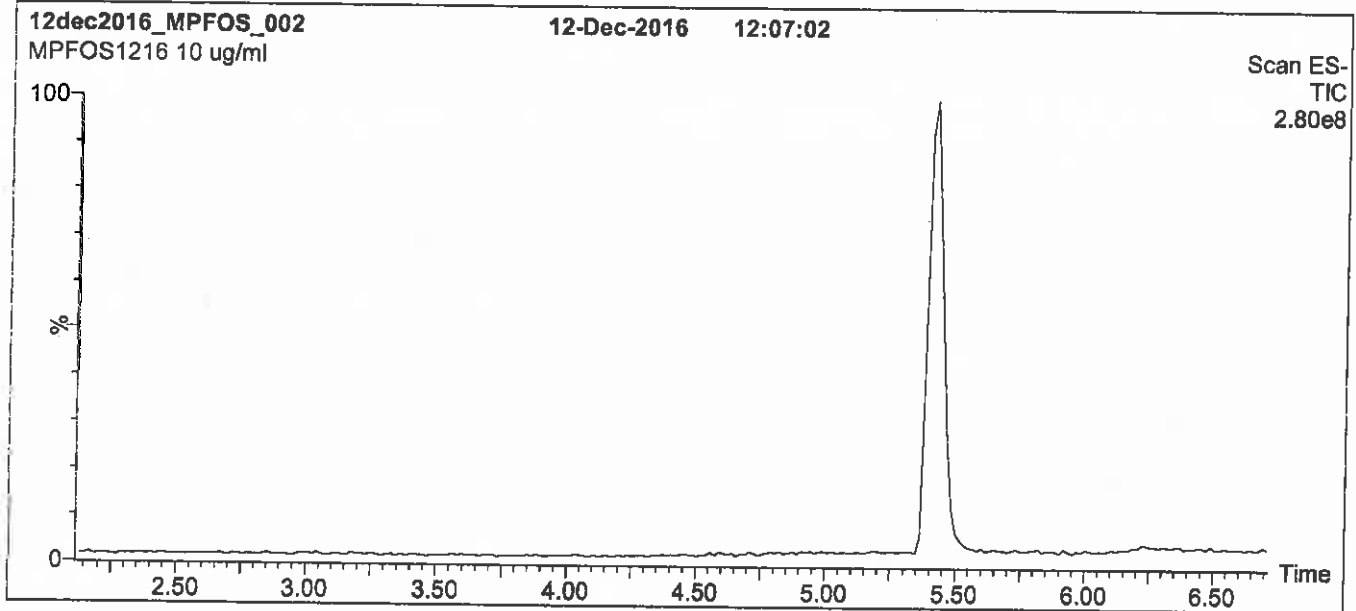
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 85% organic over 7.5 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

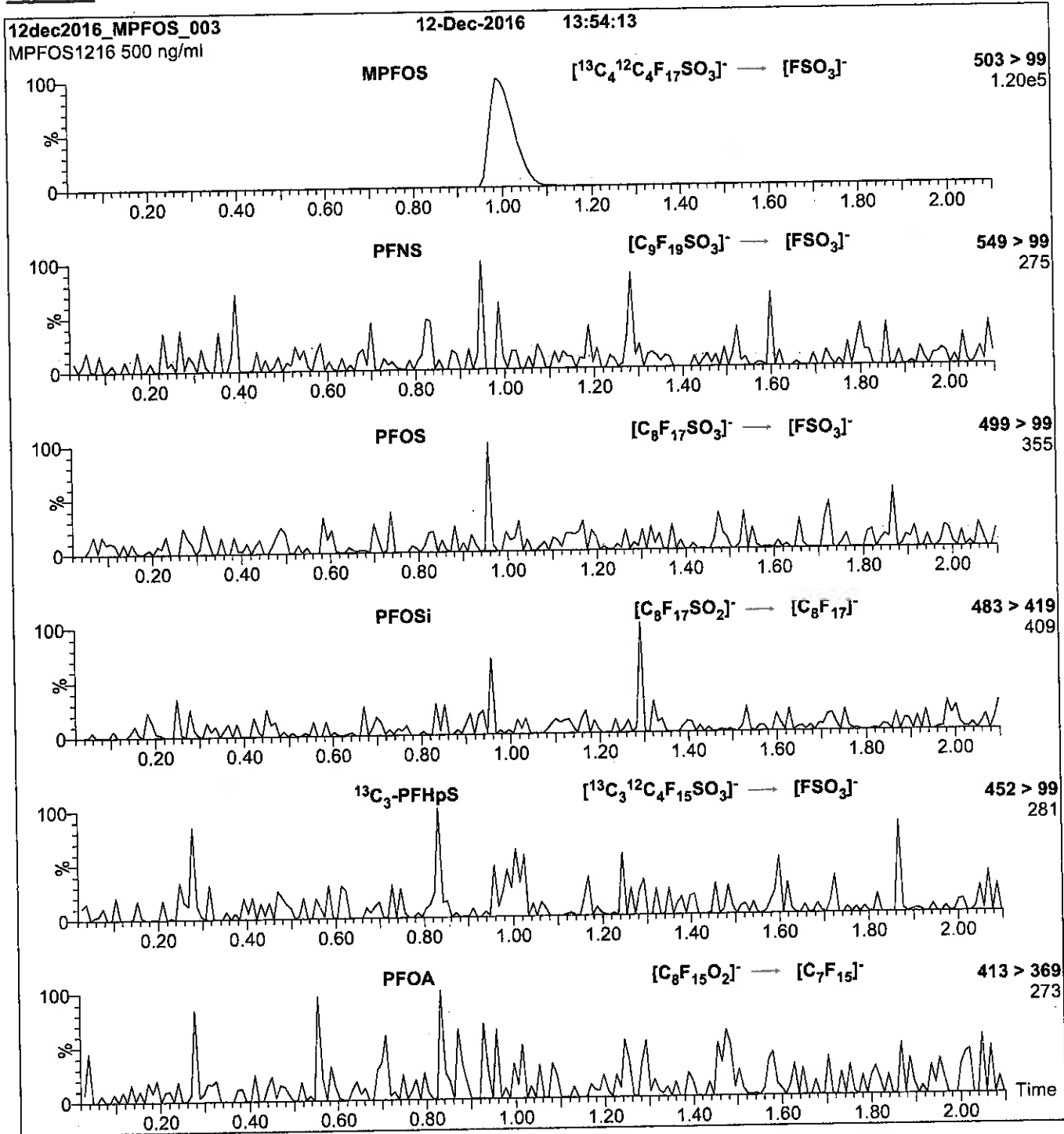
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 60.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Flow: 300 μ l/min

Figure 2: MPFOS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 40

Reagent

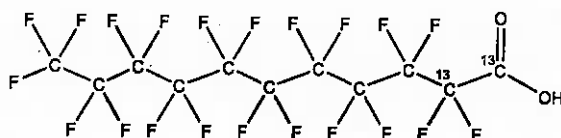
LCMPFUdA_00010



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFUdA **LOT NUMBER:** MPFUdA1116
COMPOUND: Perfluoro-n-[1,2-¹³C₂]undecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₉HF₂₁O₂ **MOLECULAR WEIGHT:** 566.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-¹³C₁-PFUdA (~1%; see Figure 2), 2-¹³C₁-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ¹³C-precursor.

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Certified By: 
 B.G. Chittim **Date:** 12/07/2016
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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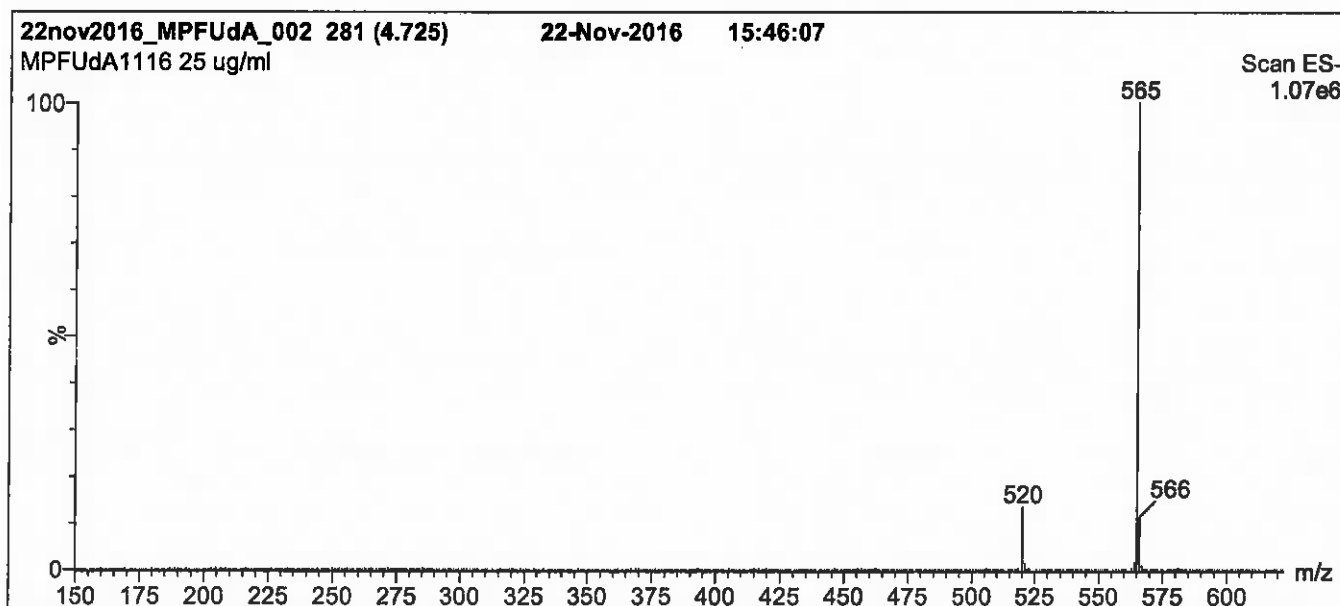
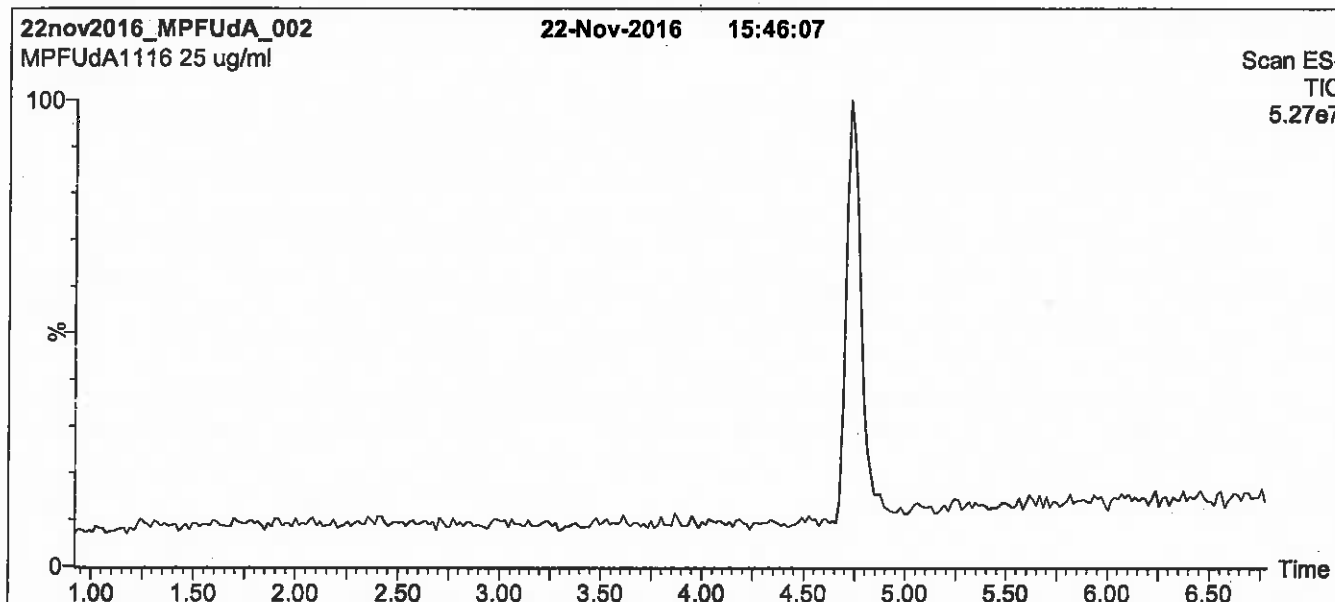
QUALITY MANAGEMENT:

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Figure 1: MPFUdA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

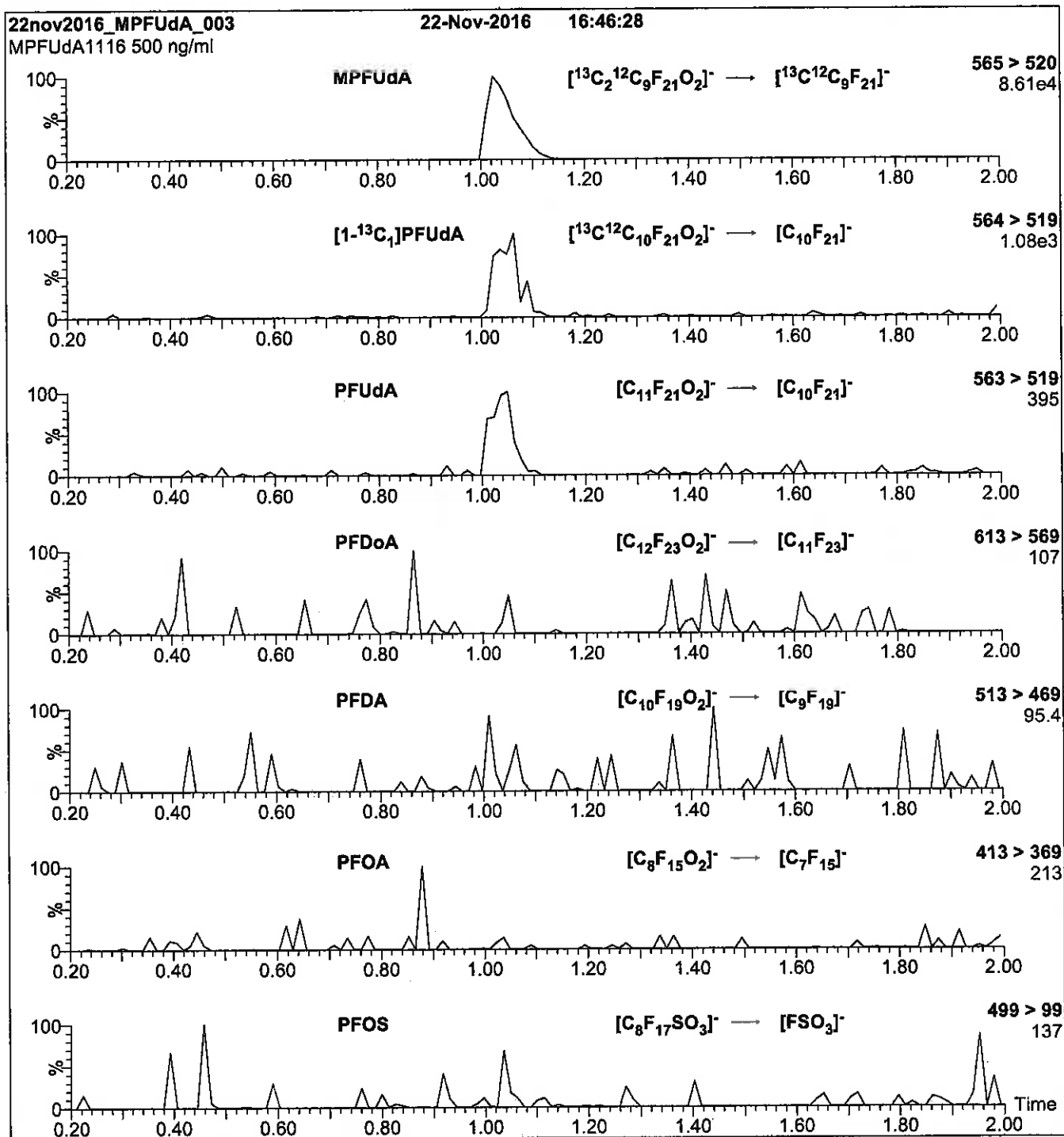
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFUdA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μl (500 ng/ml MPFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
 (both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.46e-3
 Collision Energy (eV) = 11

Reagent

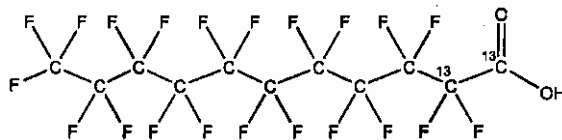
LCMPFUdA_00011



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFUdA **LOT NUMBER:** MPFUdA1116
COMPOUND: Perfluoro-n-[1,2-¹³C₂]undecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}\text{C}_2\text{C}_9\text{HF}_{21}\text{O}_2$ **MOLECULAR WEIGHT:** 566.08
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** $\geq 99\% \text{ } ^{13}\text{C}$
LAST TESTED: (mm/dd/yyyy) 11/22/2016 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-¹³C₁-PFUdA (~1%; see Figure 2), 2-¹³C₁-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ¹³C-precursor.

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Certified By:


B.G. Chittim

Date: 12/07/2016

(mm/dd/yyyy)

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EXPIRY DATE / PERIOD OF VALIDITY:

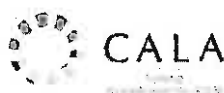
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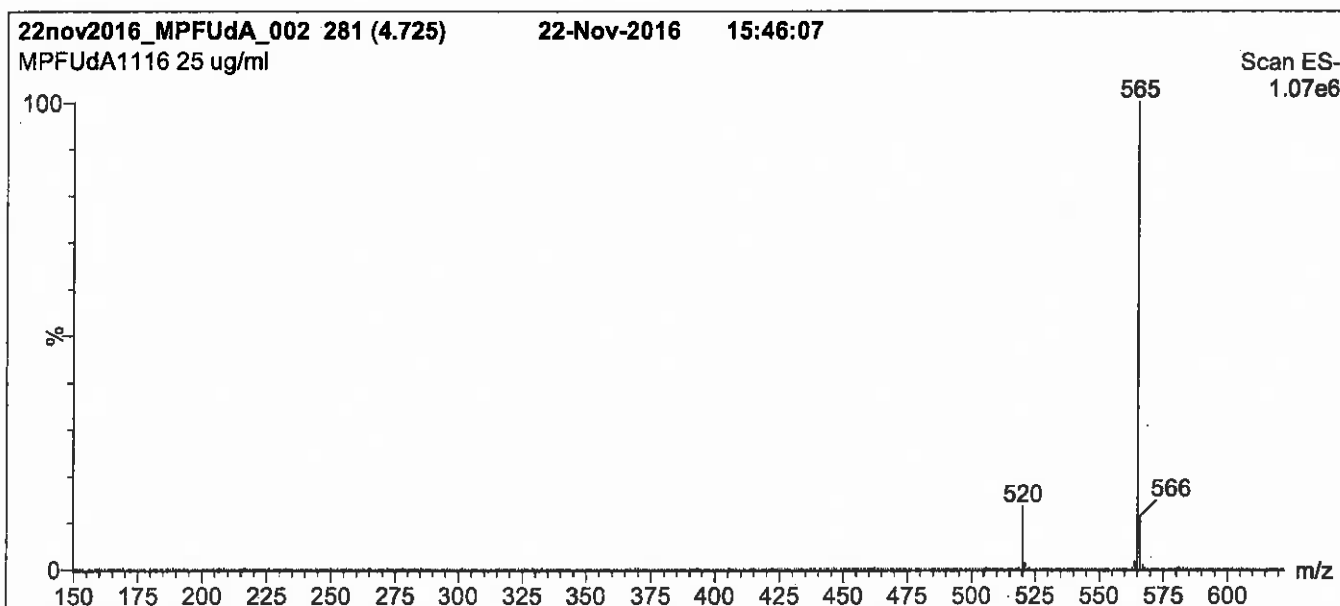
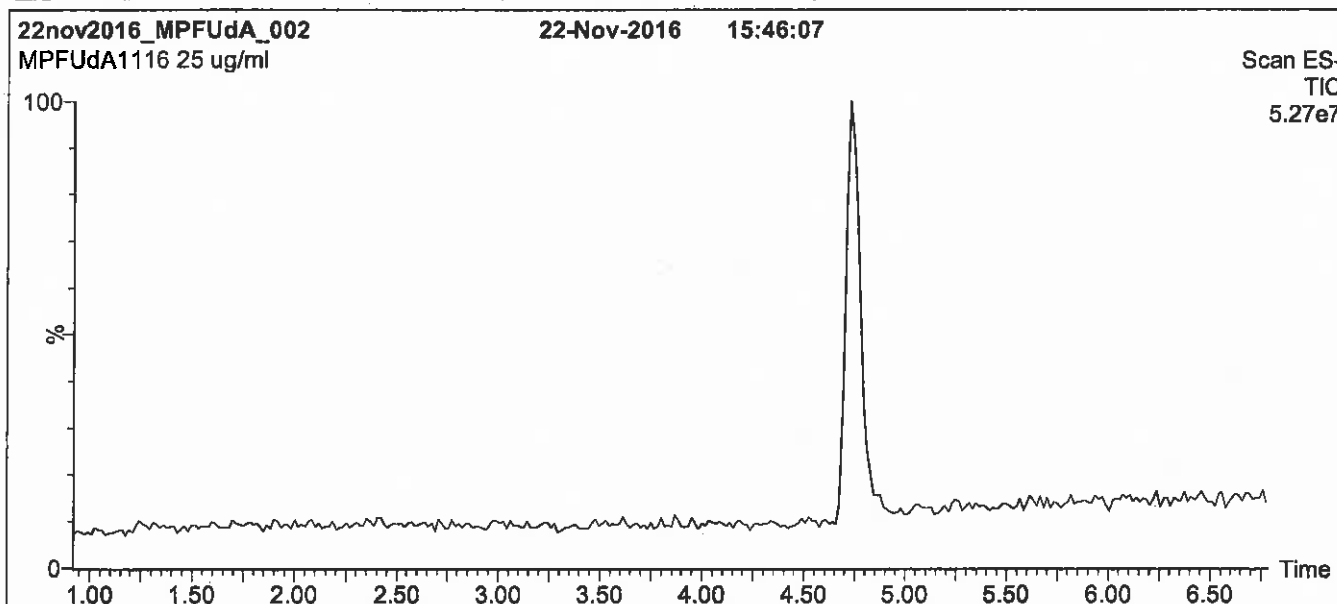
QUALITY MANAGEMENT:

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Figure 1: MPFUdA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min

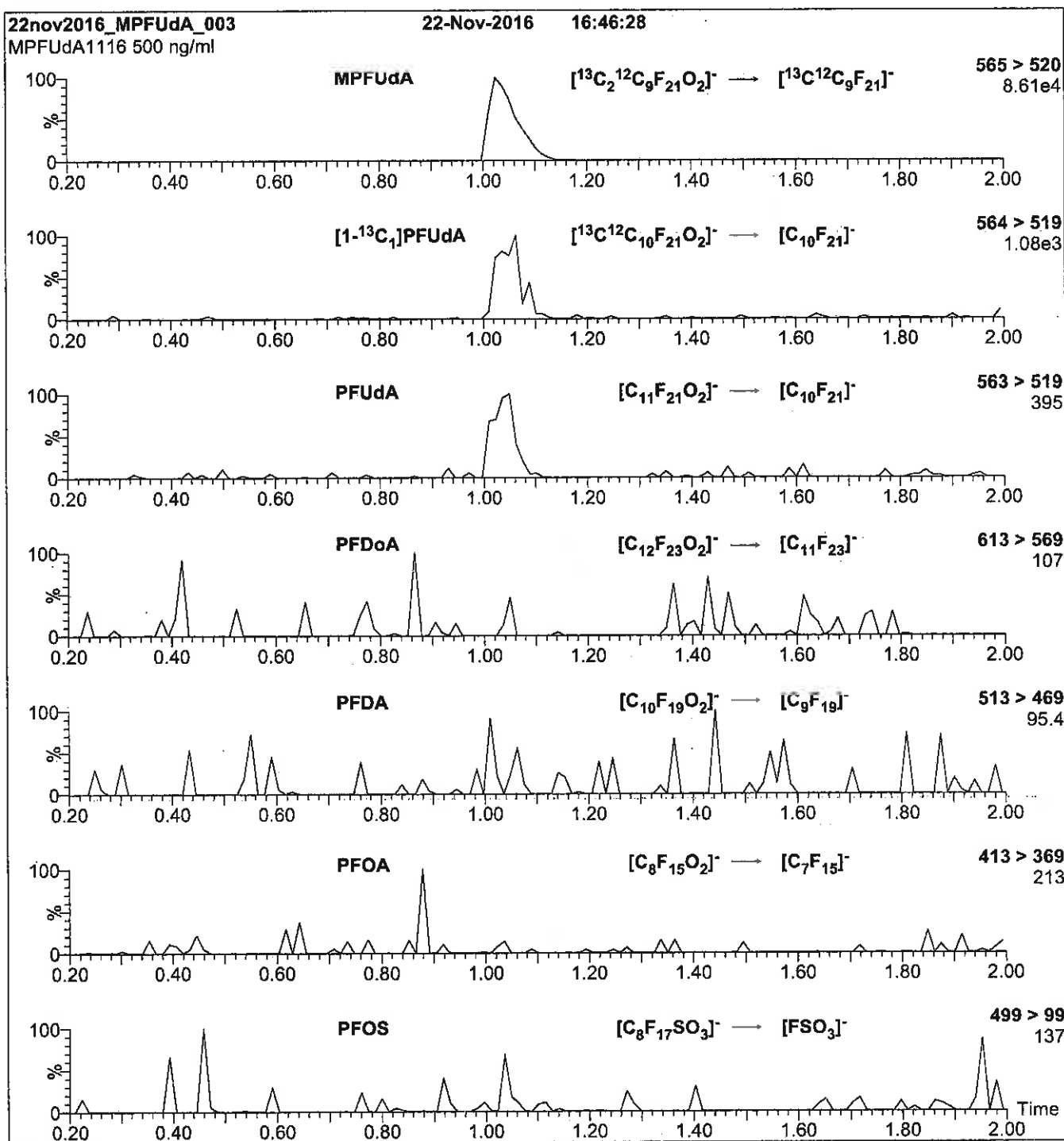
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 65
 Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFUdA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μl (500 ng/ml MPFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
 (both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.46e-3
 Collision Energy (eV) = 11

Reagent

LCN-EtFOSA-M_00003

R: 8/23/16 SBC



715563
ID: LCN-EtFOSA-M_00003
Exp: 05/24/21 Prpt: SBC
N-EtFOSA-M

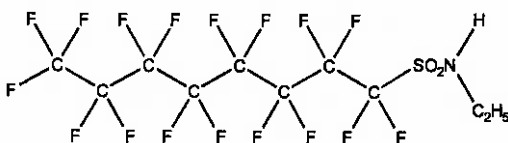


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M **LOT NUMBER:** NEtFOSA0516M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** 4151-50-2



MOLECULAR FORMULA: C₁₀H₈F₁₇NO₂S **MOLECULAR WEIGHT:** 527.20
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/24/2016
EXPIRY DATE: (mm/dd/yyyy) 05/24/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/27/2016
(mm/dd/yyyy)

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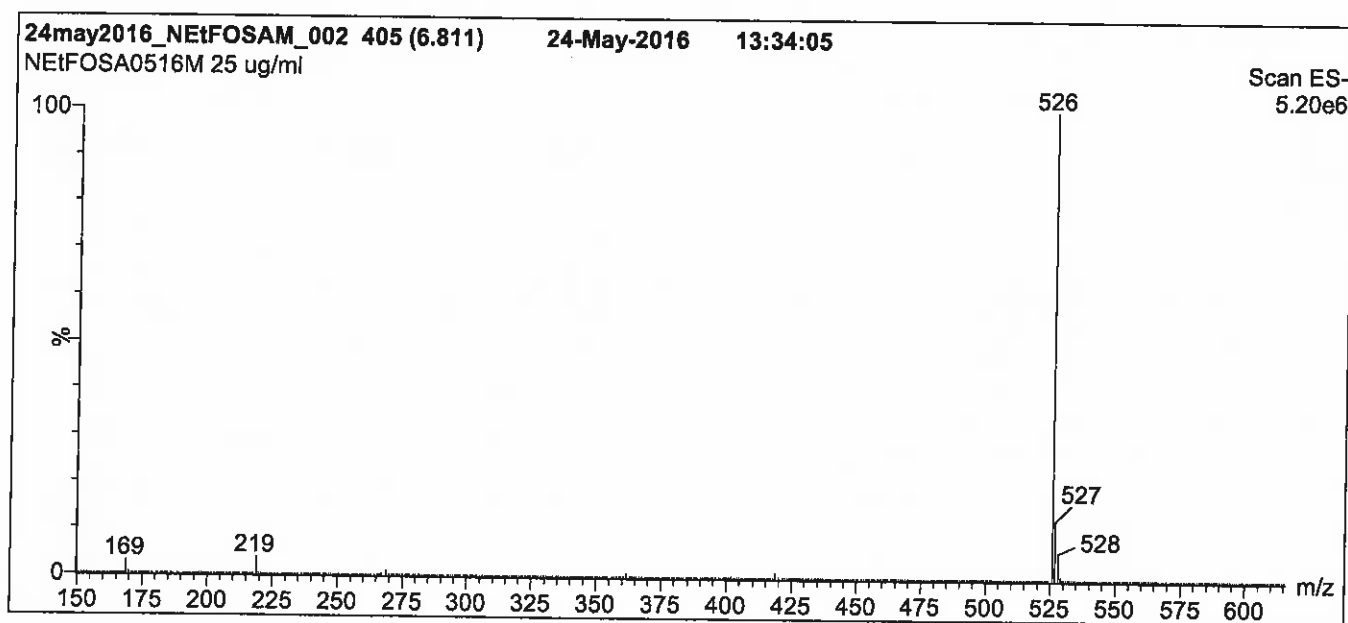
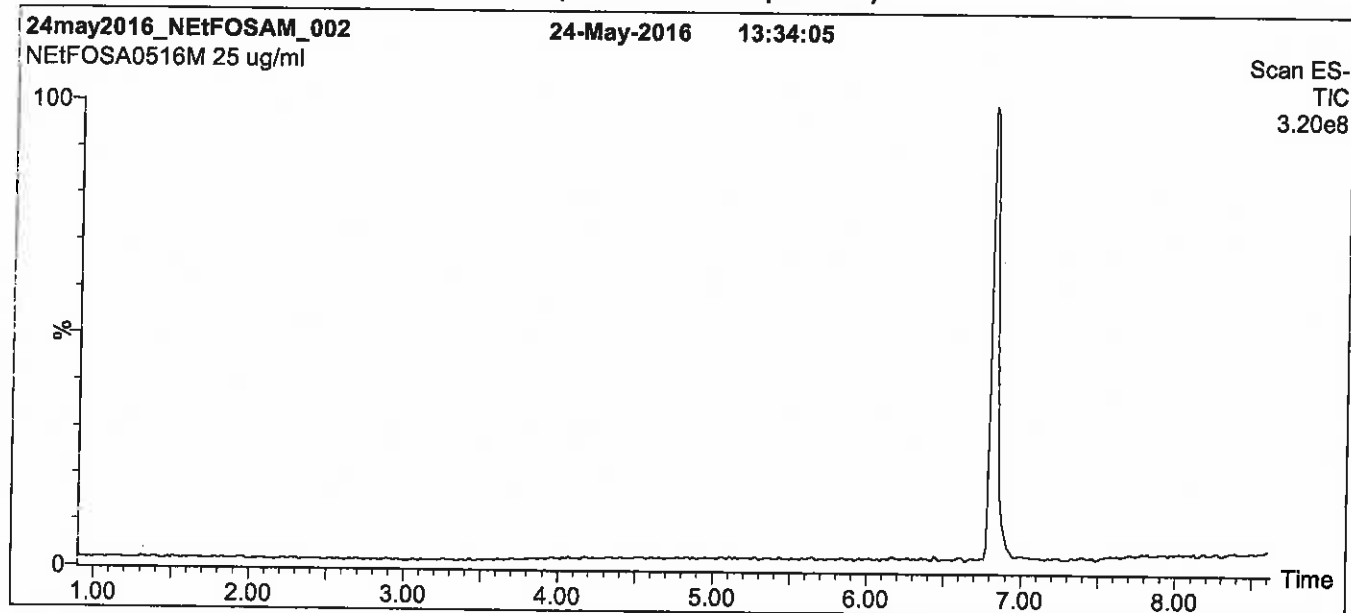
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 45% H₂O / 55% (80:20 MeOH:ACN)
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for 1.5
 min before returning to initial conditions in 0.5 min.
 Time: 10 min

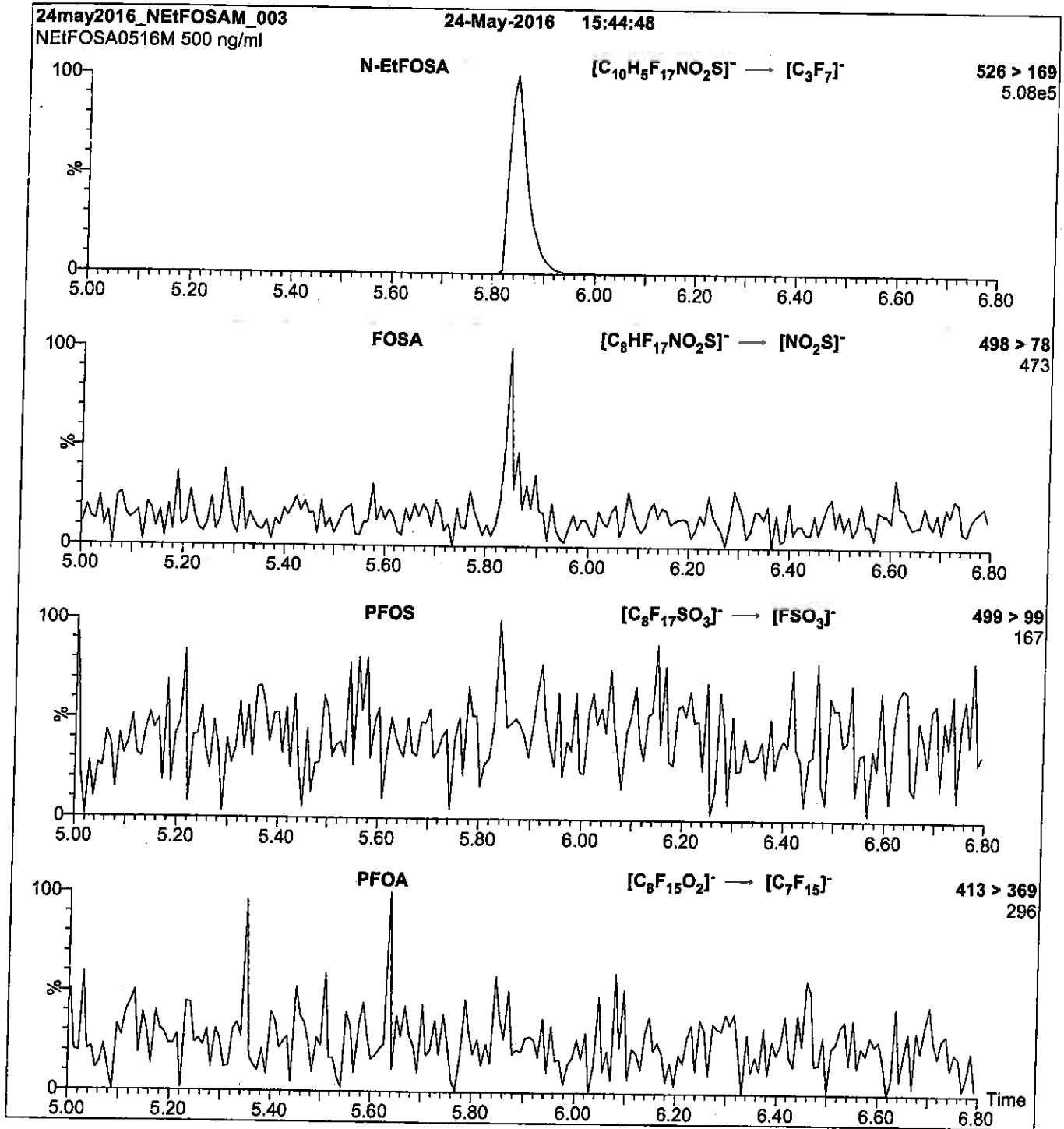
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.50
 Cone Voltage (V) = 40.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-EtFOSA-M)

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

Reagent

LCN-EtFOSA-M_00004

R: 12/29/16 SKV



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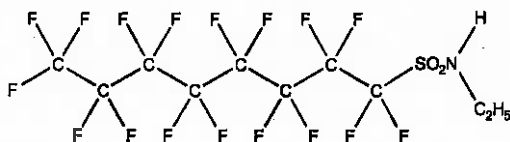
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide

LOT NUMBER: NEtFOSA0516M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA: C₁₀H₈F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/24/2016
EXPIRY DATE: (mm/dd/yyyy) 05/24/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 527.20
SOLVENT(S): Methanol


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim
Date: 05/27/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

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UNCERTAINTY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

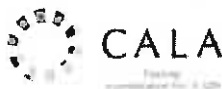
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

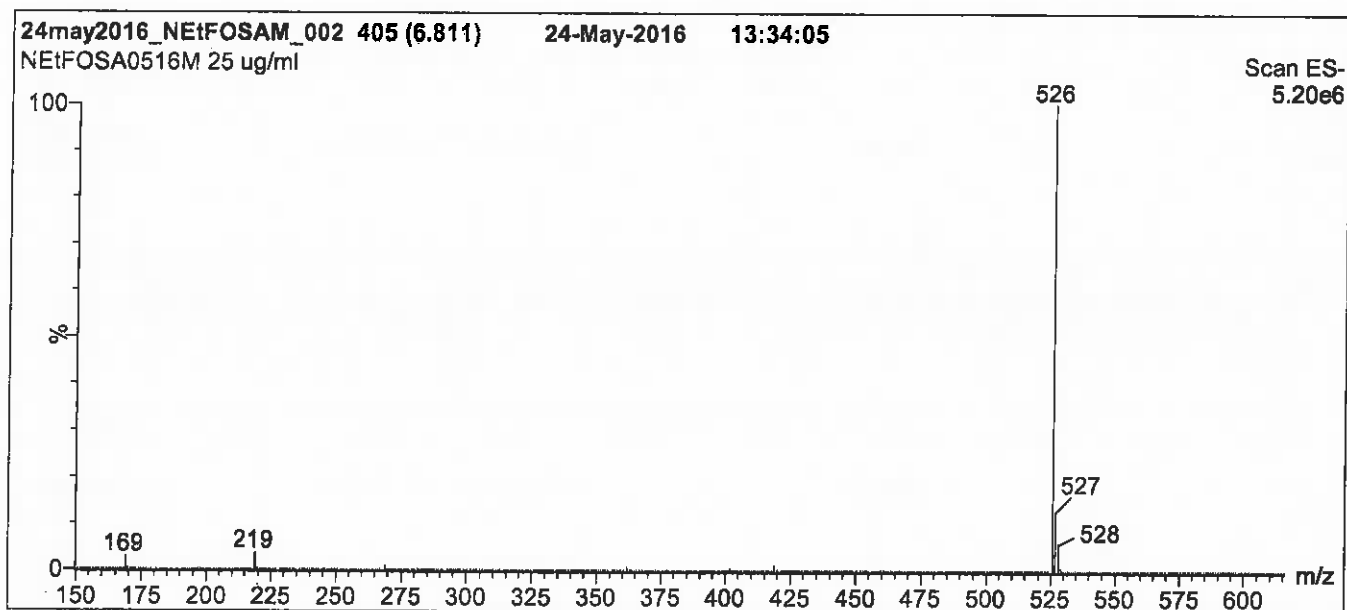
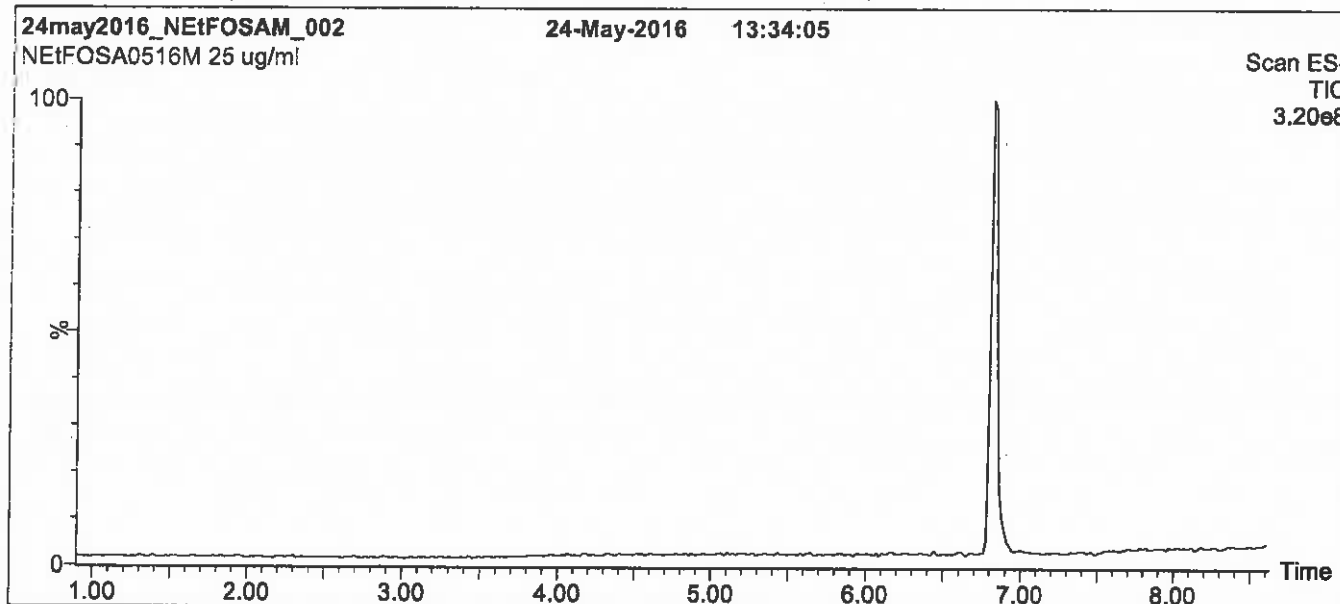
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 45% H₂O / 55% (80:20 MeOH:ACN)
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for 1.5
 min before returning to initial conditions in 0.5 min.
 Time: 10 min

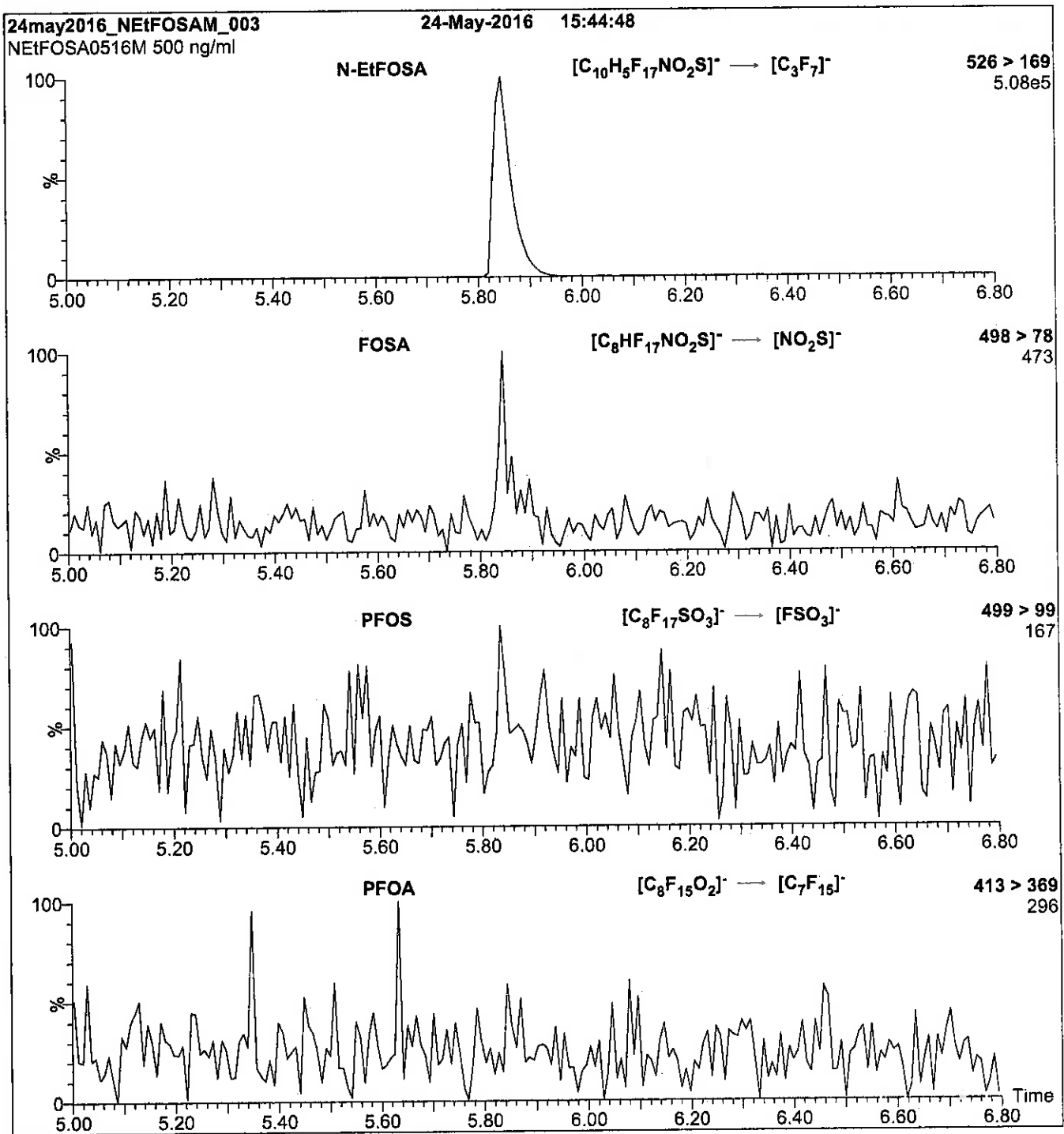
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.50
 Cone Voltage (V) = 40.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-ETFOSAA_00002

R: 8/23/16 SBC



715561
ID: LCN-EiFOSAA_00002
Exp: 01/2021 Pp# 98C
N-EiFOSAA

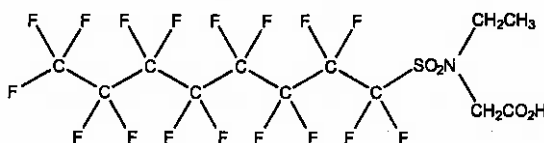


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEiFOSAA0116
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: C₁₂H₈F₁₇NO₄S **MOLECULAR WEIGHT:** 585.23
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/20/2016
EXPIRY DATE: (mm/dd/yyyy) 01/20/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/21/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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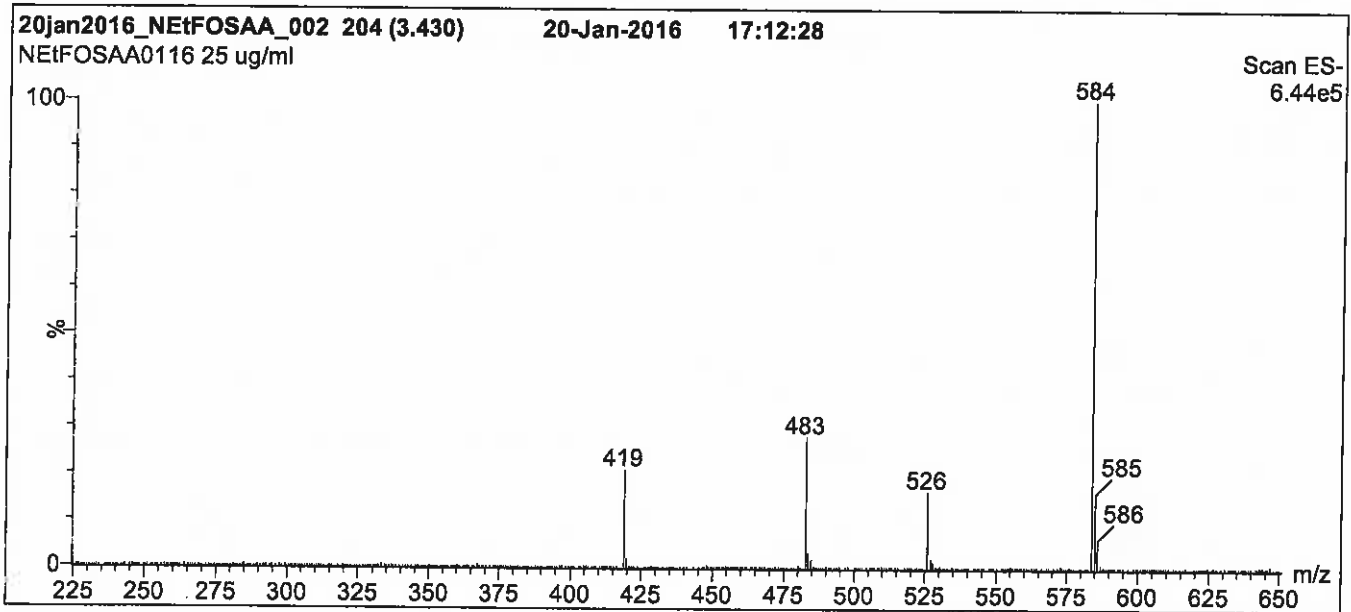
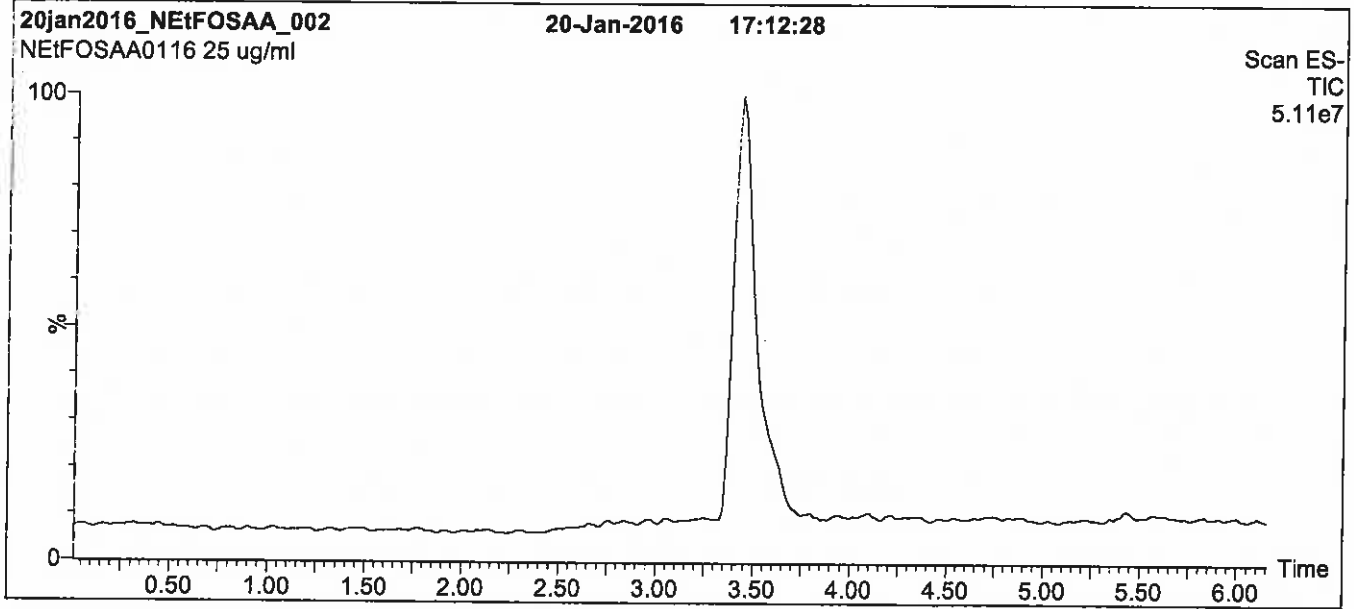
QUALITY MANAGEMENT:

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Figure 1: N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

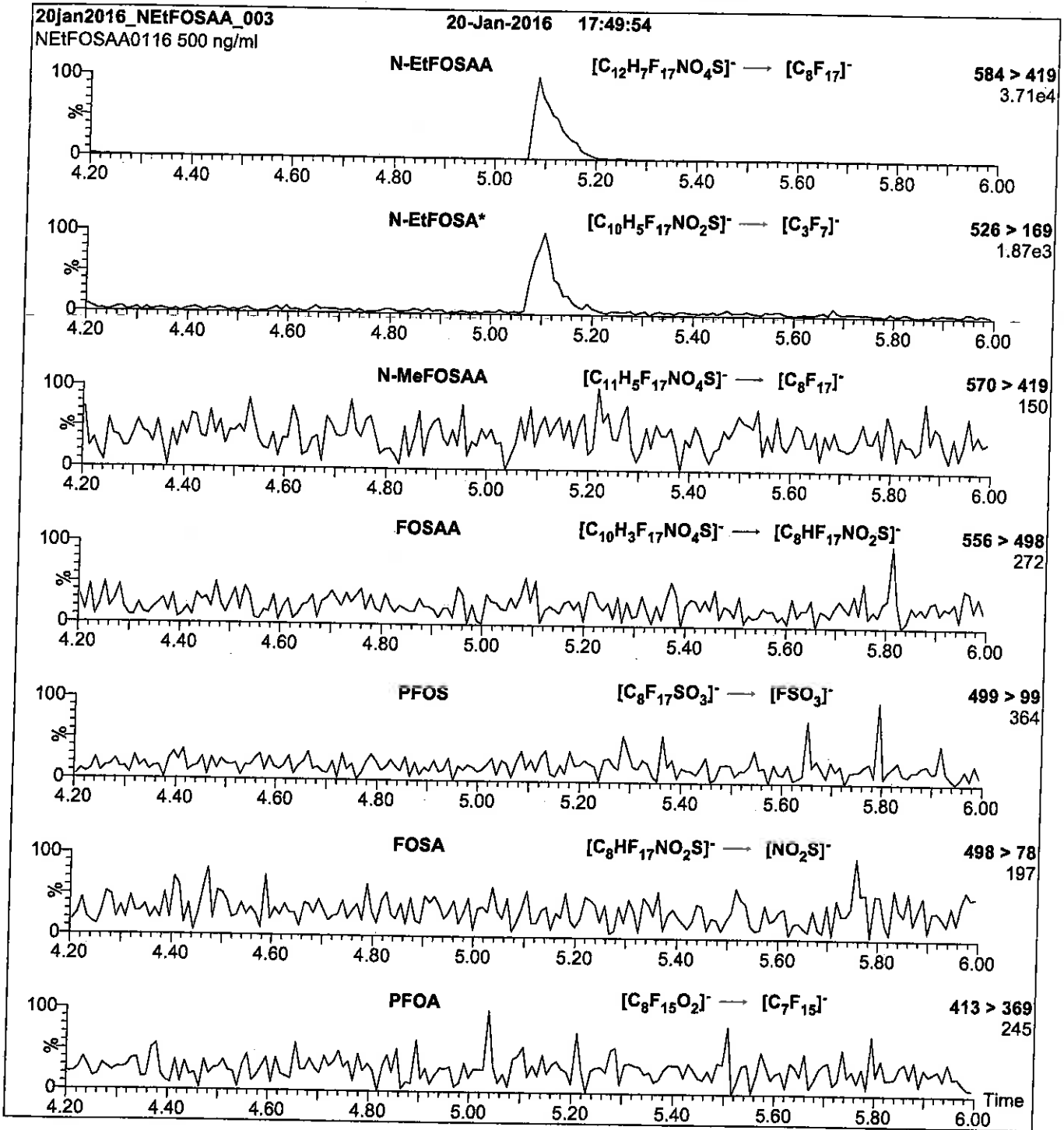
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

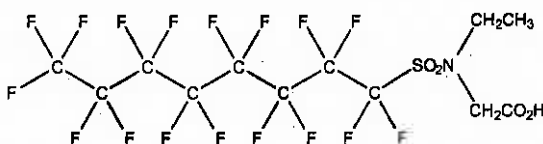
Reagent

LCN-ETFOSAA_00003

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0916
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: C₁₂H₈F₁₇NO₄S **MOLECULAR WEIGHT:** 585.23
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 10/07/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HOMOGENEITY:

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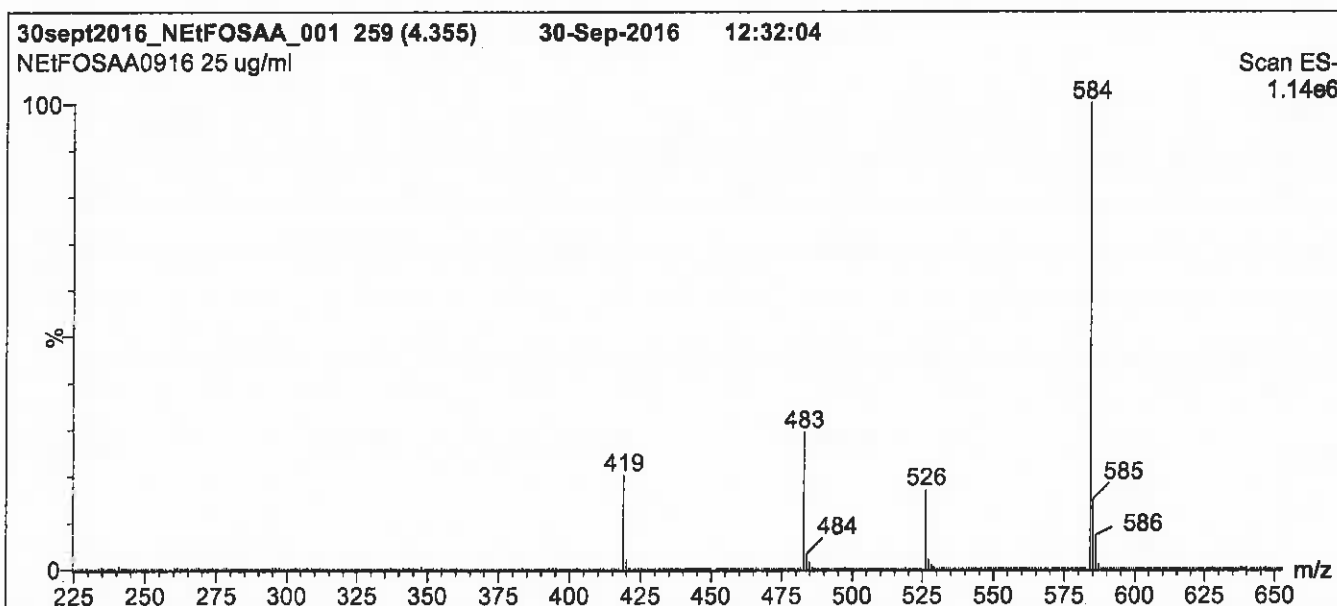
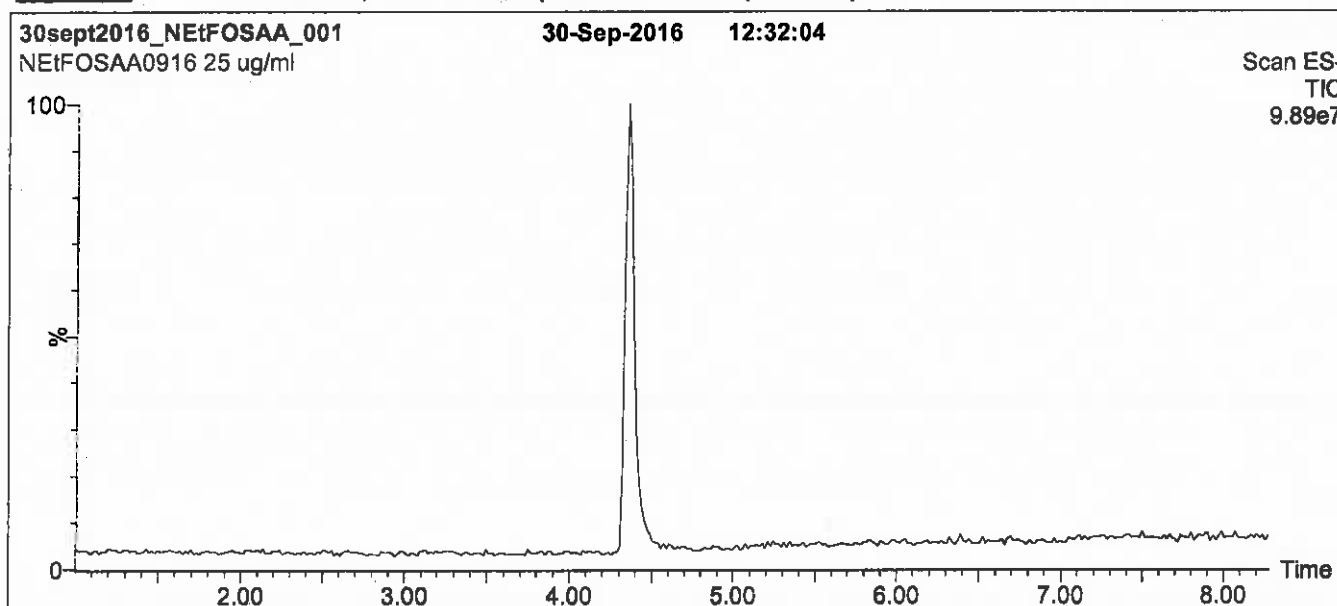
QUALITY MANAGEMENT:

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Figure 1: N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

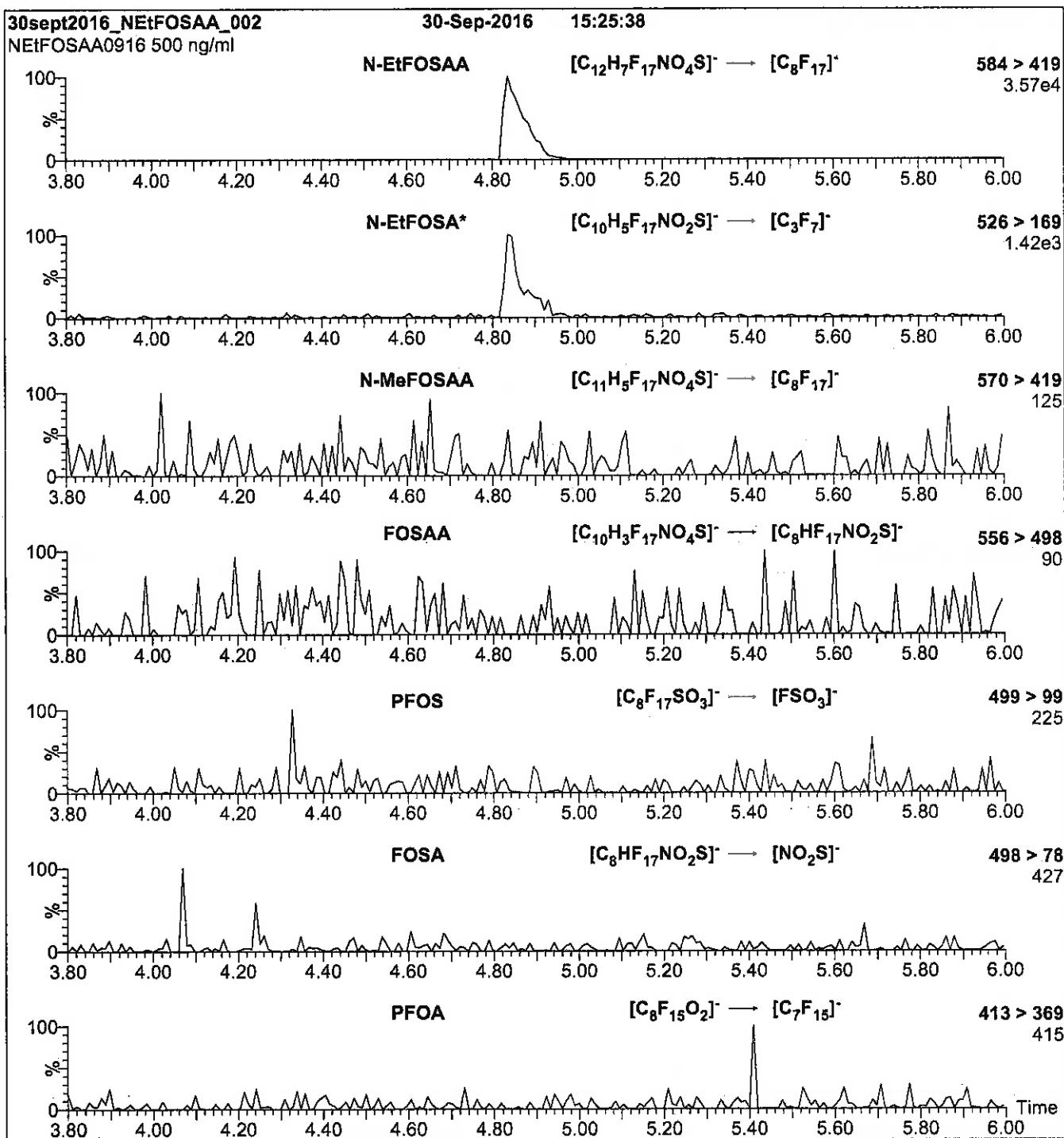
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 20

Reagent

LCN-MeFOSA-M_00002

R: 8/23/16 SBC



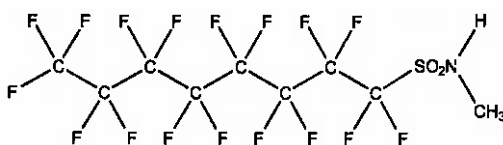
715564
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Exp: 05/24/21 Pppl: SBC
N-MeFOSA-M



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M **LOT NUMBER:** NMeFOSA0516M
COMPOUND: N-methylperfluoro-1-octanesulfonamide
STRUCTURE: **CAS #:** 31506-32-8



MOLECULAR FORMULA: C₉H₄F₁₇NO₂S **MOLECULAR WEIGHT:** 513.17
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/24/2016
EXPIRY DATE: (mm/dd/yyyy) 05/24/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/26/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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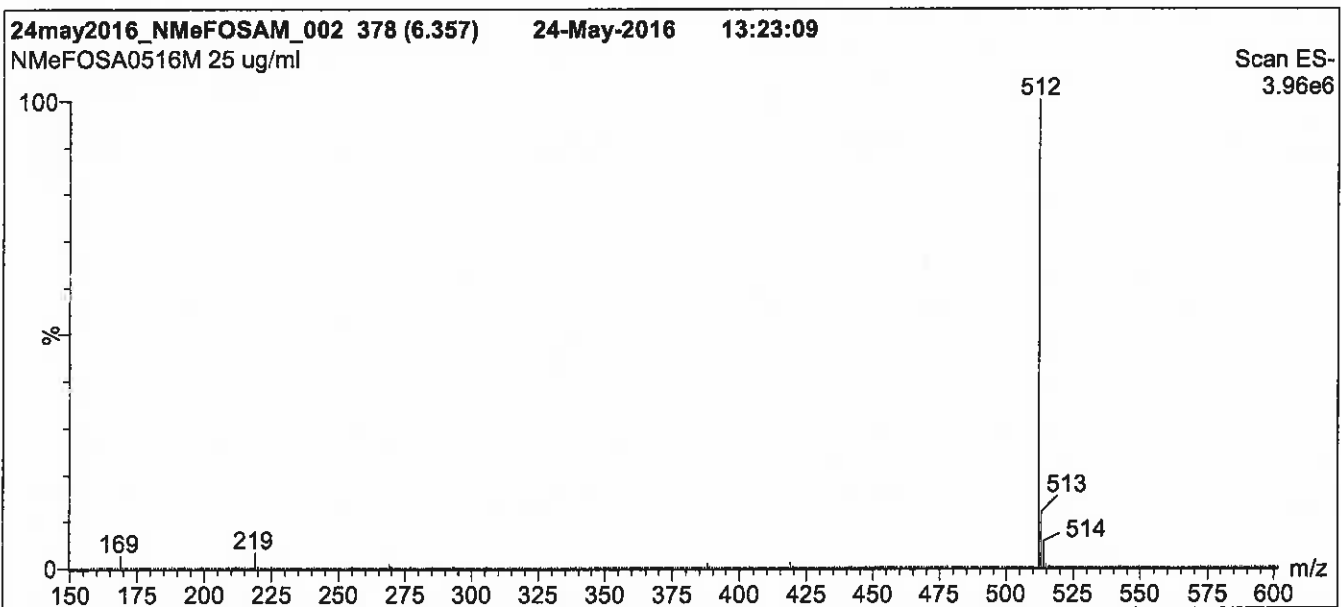
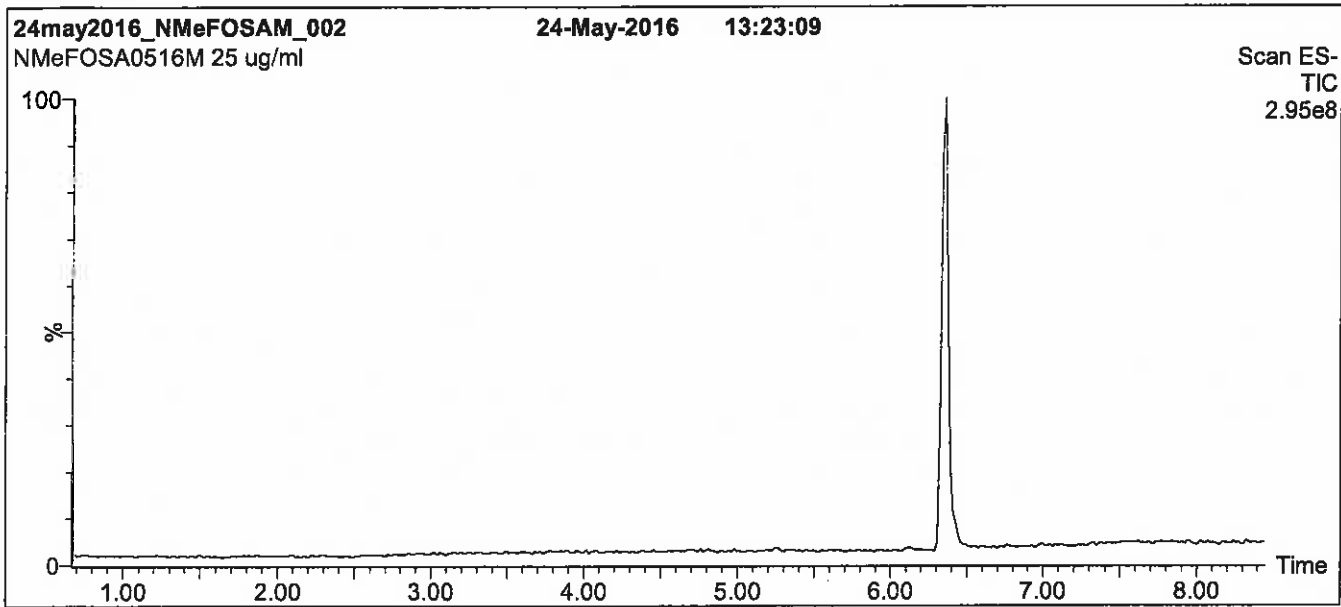
QUALITY MANAGEMENT:

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Figure 1: N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 45% H₂O / 55% (80:20 MeOH:ACN)
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min

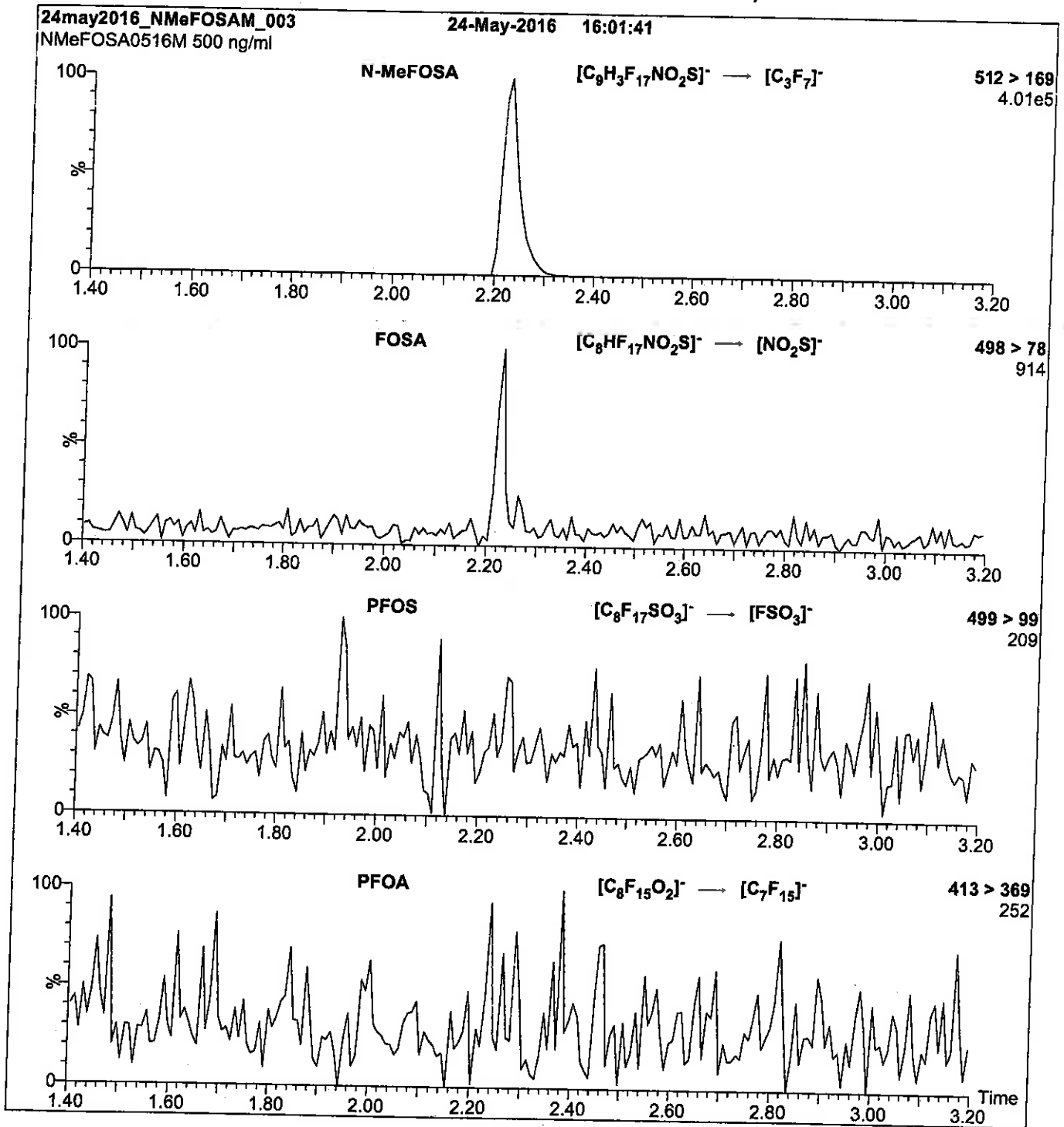
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.50
 Cone Voltage (V) = 40.00
 Core Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSA-M)

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

Reagent

LCN-MeFOSA-M_00003

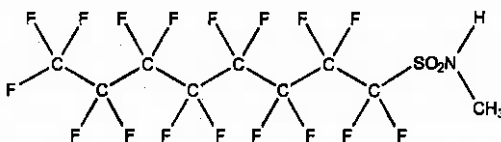


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M **LOT NUMBER:** NMeFOSA0516M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** 31506-32-8



MOLECULAR FORMULA: C₉H₄F₁₇NO₂S **MOLECULAR WEIGHT:** 513.17
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/24/2016
EXPIRY DATE: (mm/dd/yyyy) 05/24/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/26/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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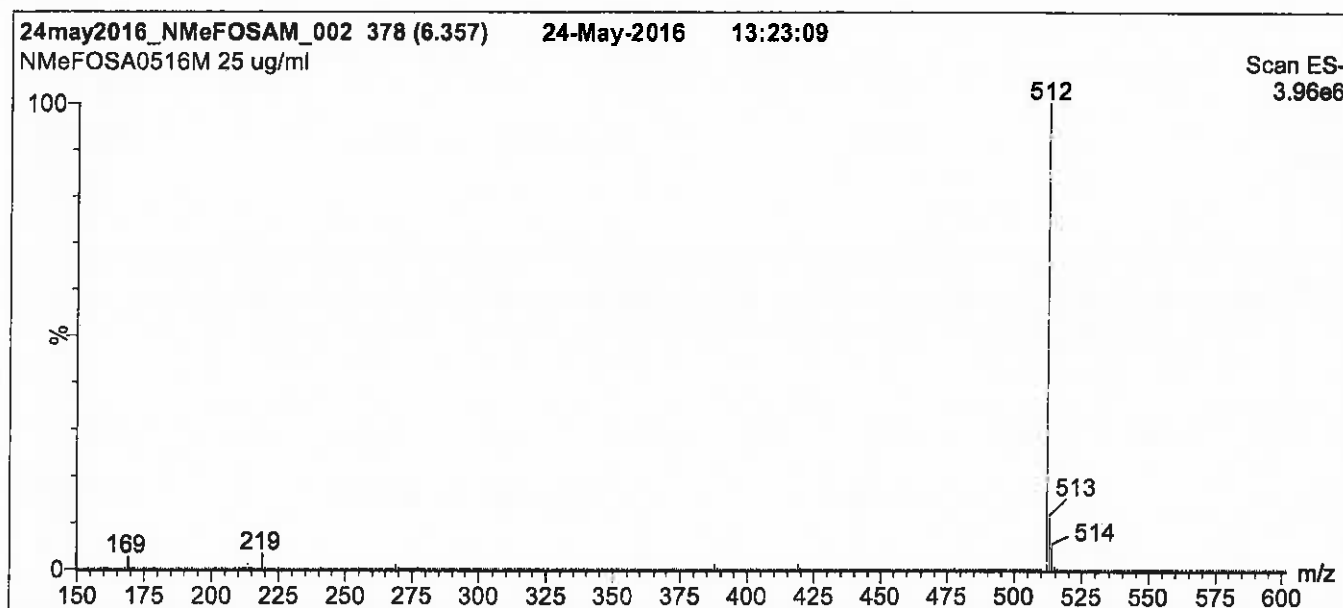
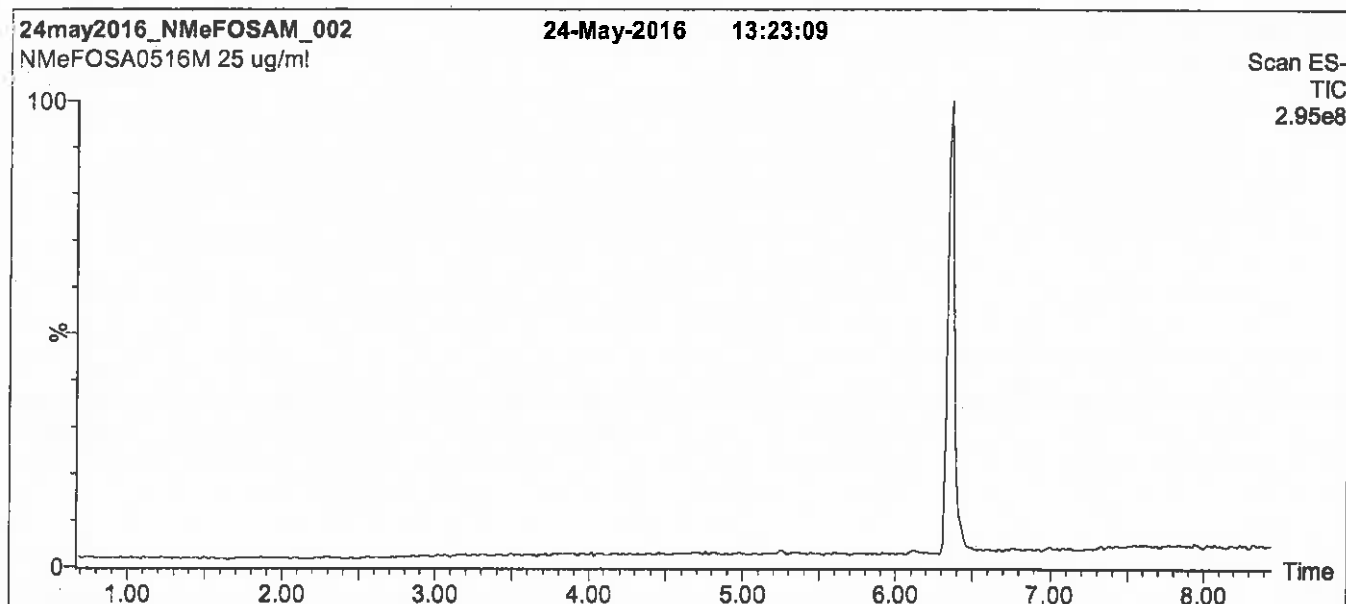
QUALITY MANAGEMENT:

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Figure 1: N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

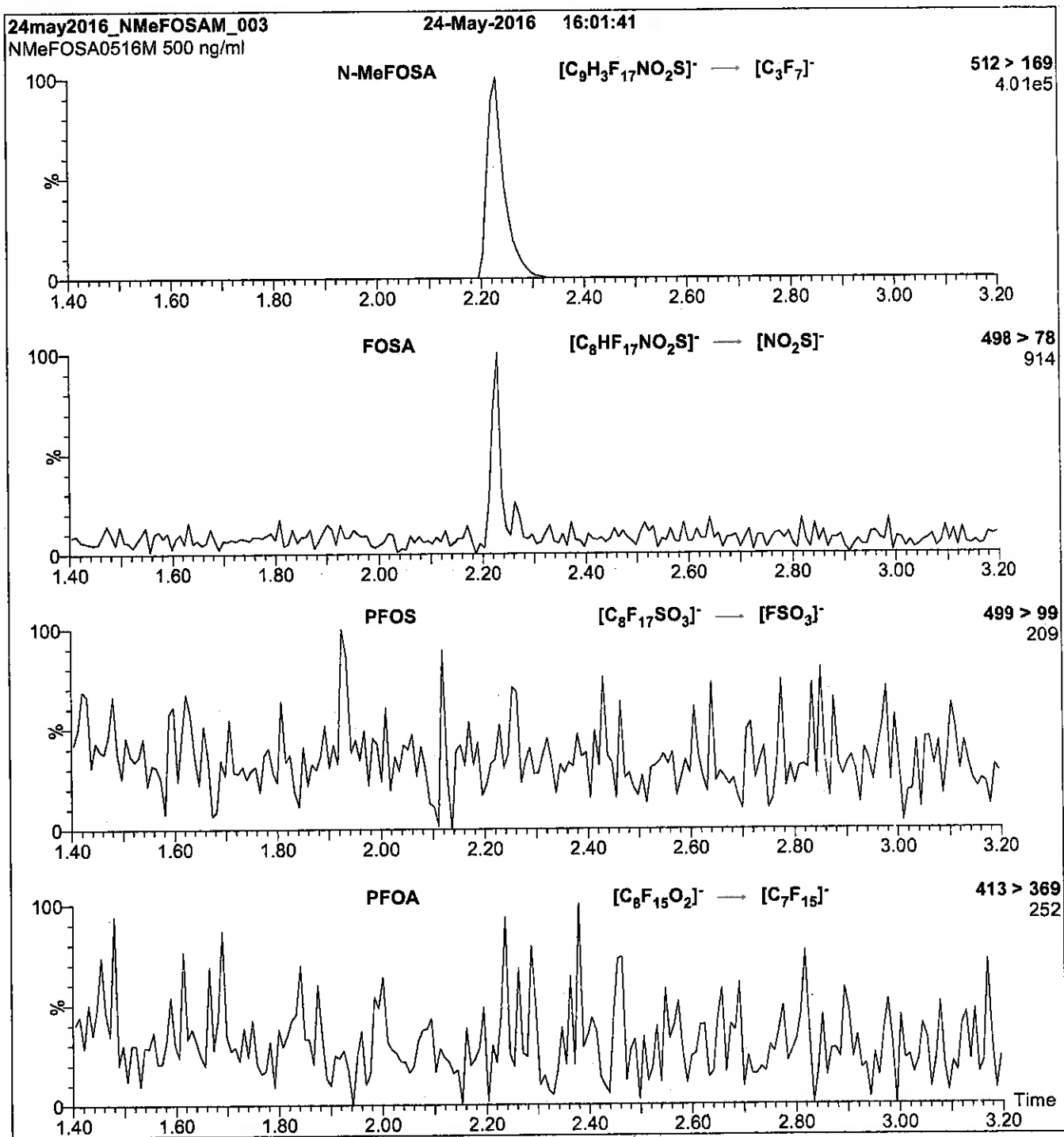
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-MeFOSAA_00003

R: 8/23/16 *SAE*

715562
ID: LCN-MeFOSAA_00003
Exp: 01/20/21 Prpd. SEC
N-MeFOSAA

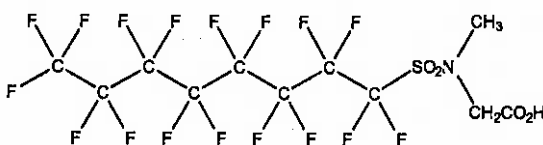


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0116
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA: C₁₁H₈F₁₇NO₄S **MOLECULAR WEIGHT:** 571.21
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/20/2016
EXPIRY DATE: (mm/dd/yyyy) 01/20/2021
RECOMMENDED STORAGE: Refrigerate ampoule

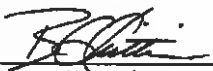
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 01/21/2016
B.G. Chittim (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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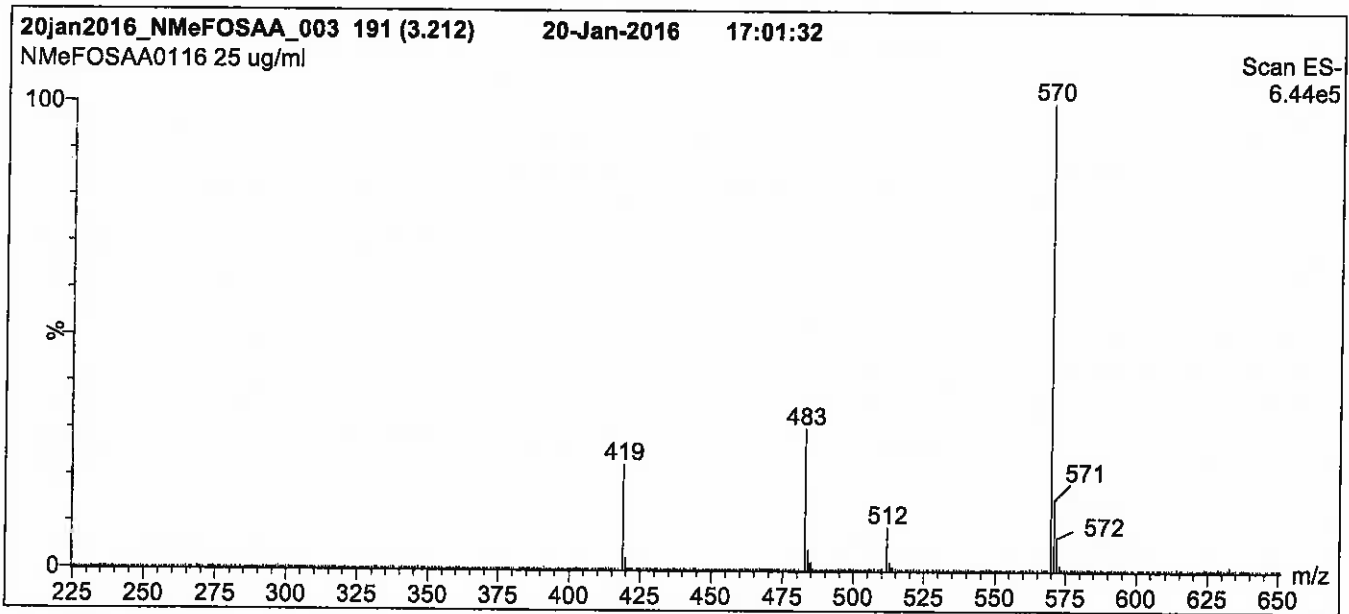
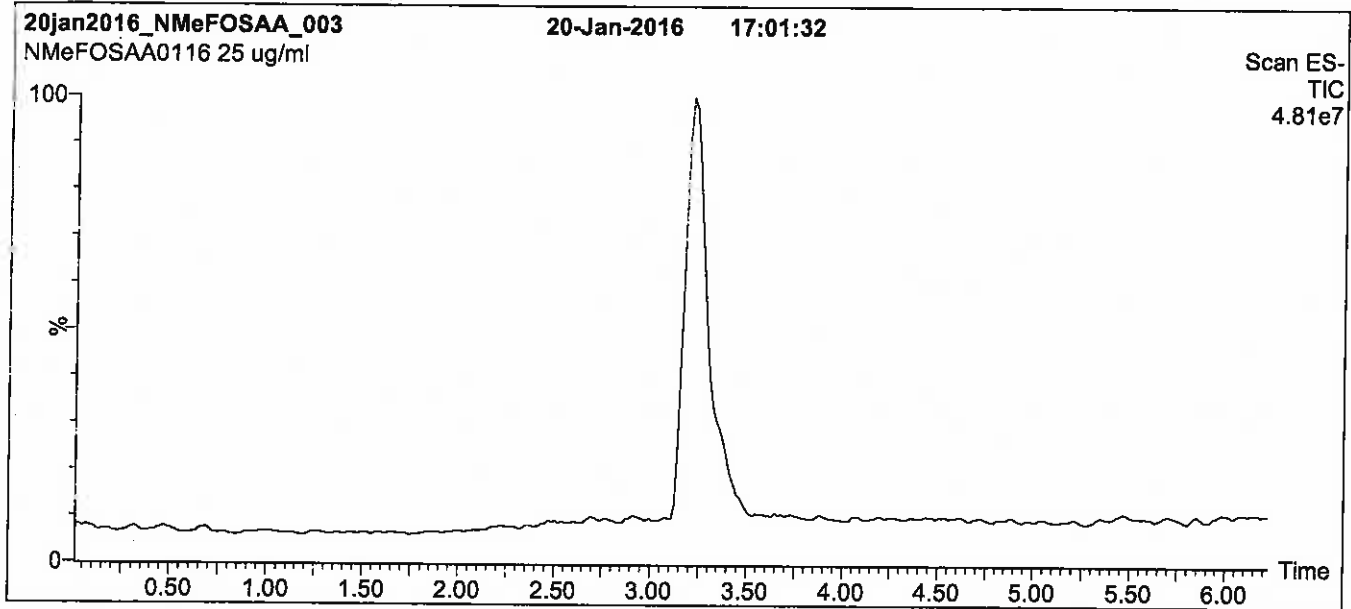
QUALITY MANAGEMENT:

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Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

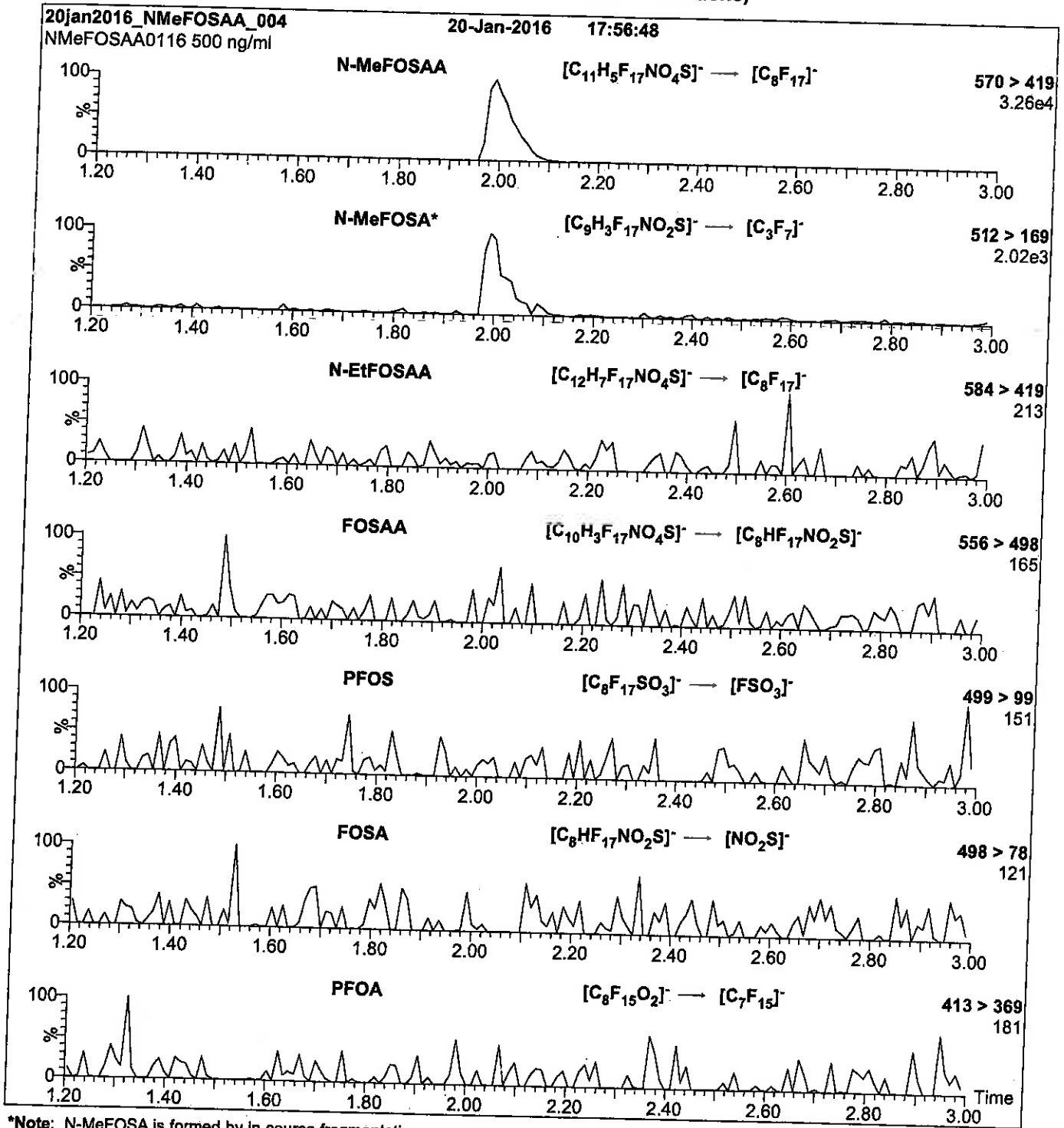
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 35.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

Reagent

LCN-MeFOSAA_00004

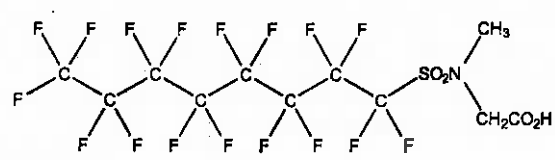


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0916
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA: C₁₁H₈F₁₇NO₄S **MOLECULAR WEIGHT:** 571.21
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/12/2016
EXPIRY DATE: (mm/dd/yyyy) 10/12/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/25/2016
 B.G. Chittim (mm/dd/yyyy)

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 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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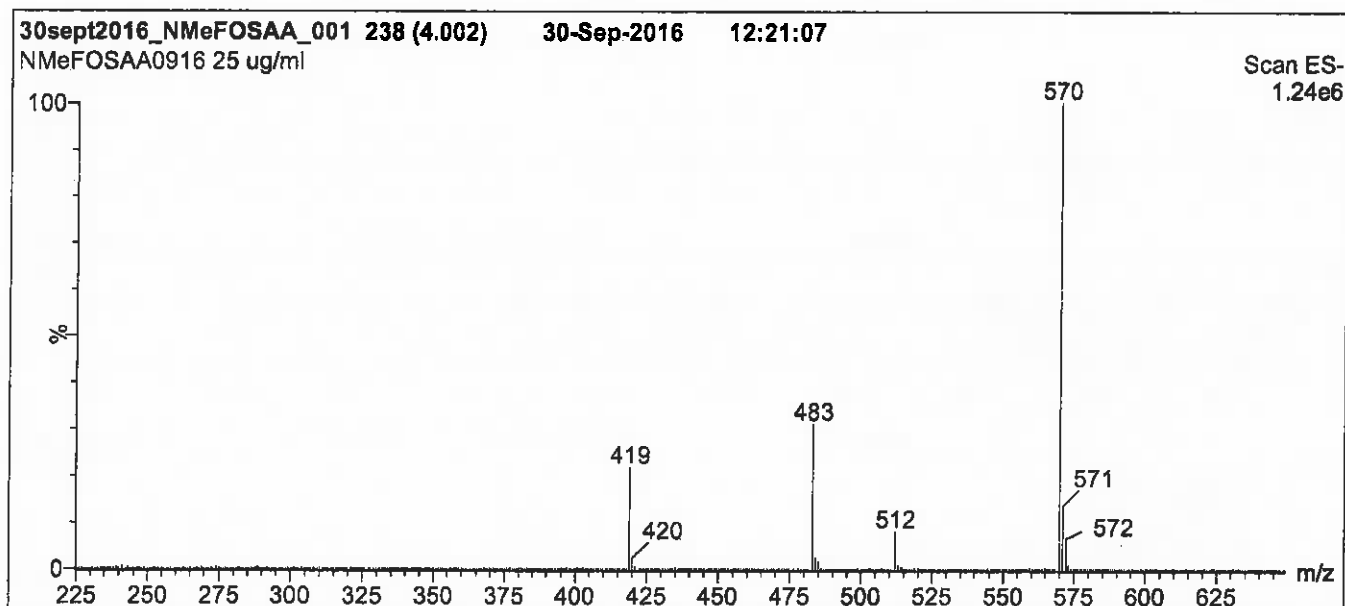
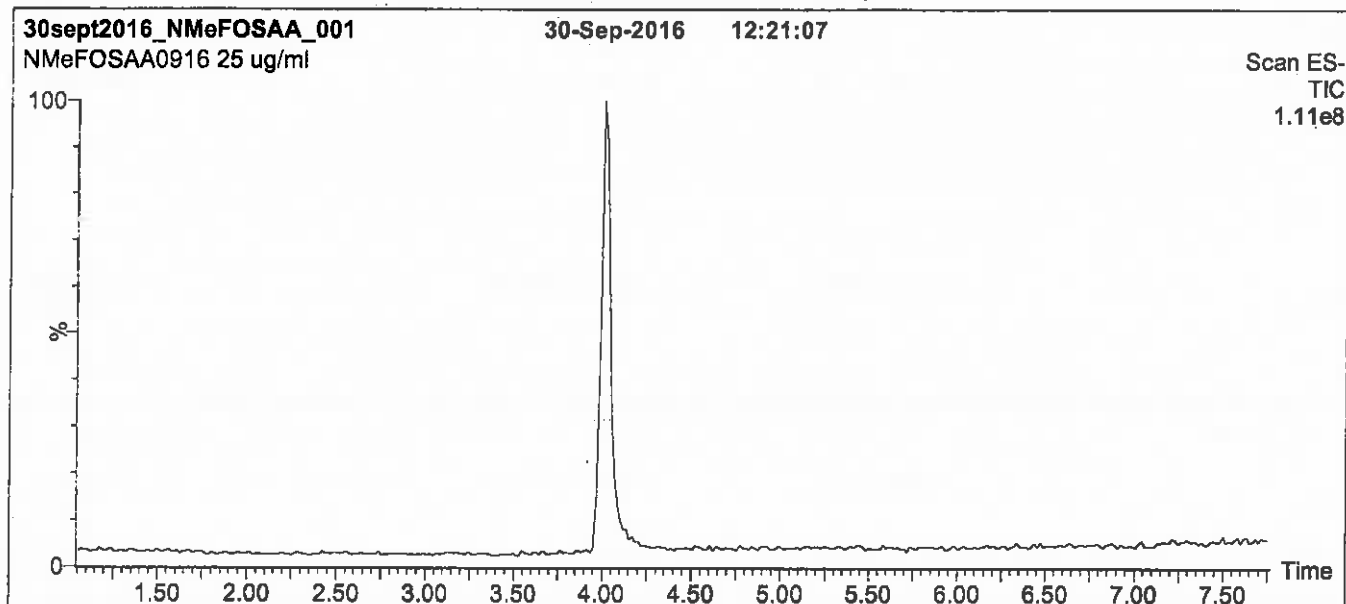
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Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 65% (80:20 MeOH:ACN) / 35% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min

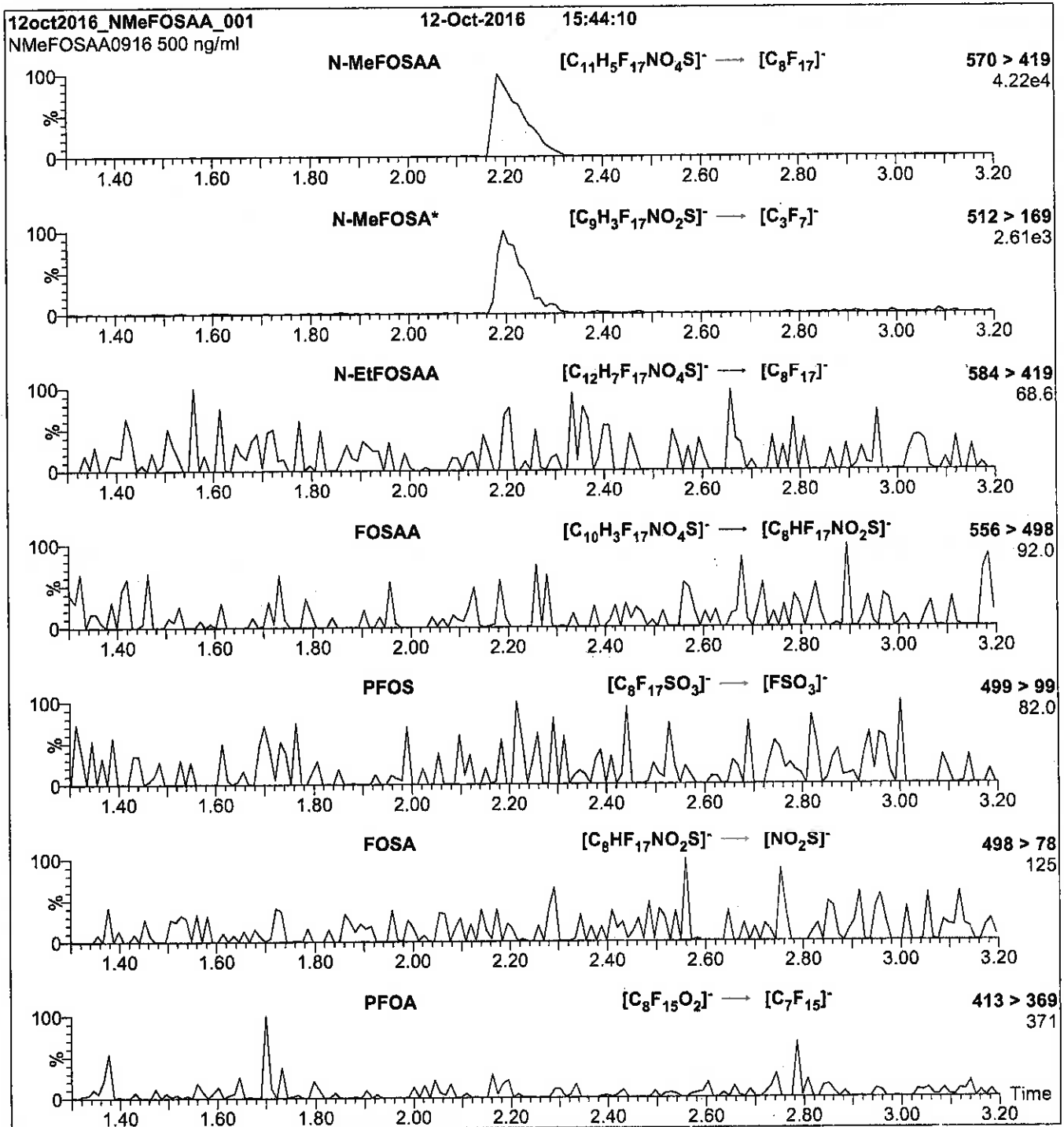
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 35.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



*Note: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 20

Reagent

LCPFACMXB_00007



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXB

**Solution/Mixture of Native
Perfluoroalkylcarboxylic Acids and
Native Perfluoroalkylsulfonates**

PRODUCT CODE: PFAC-MXB
LOT NUMBER: PFACMXB1115
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 11/04/2015
LAST TESTED: (mm/dd/yyyy) 11/06/2015
EXPIRY DATE: (mm/dd/yyyy) 11/06/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXB is a solution/mixture of thirteen native perfluoroalkylcarboxylic acids (C₄-C₁₄, C₁₆, and C₁₈) and four native perfluoroalkylsulfonates (C₄, C₆, C₈ and C₁₀). The full name, abbreviation and concentration for each of the components are given in Table A.

The individual perfluoroalkylcarboxylic acids and perfluoroalkylsulfonates all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
 Figure 1: LC/MS Data (SiR)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

**Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com**

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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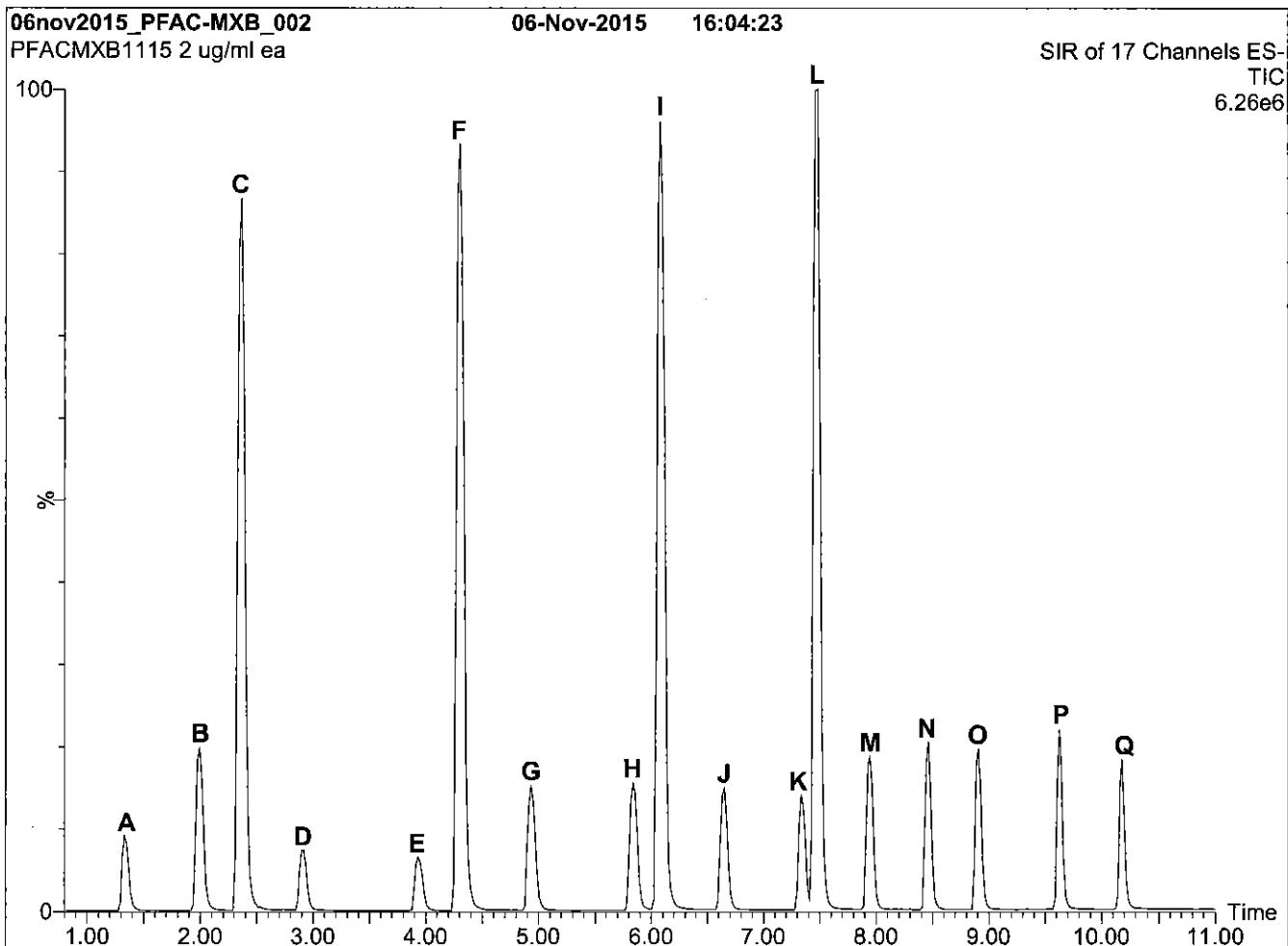
Table A: PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))

| Name | Abbreviation | Concentration (ng/ml) | | Peak Assignment in Figure 1 |
|---------------------------------------|--------------|-----------------------|--------------|-----------------------------|
| | | as the salt | as the anion | |
| Perfluoro-n-butanoic acid | PFBA | 2000 | | A |
| Perfluoro-n-pentanoic acid | PFPeA | 2000 | | B |
| Perfluoro-n-hexanoic acid | PFHxA | 2000 | | D |
| Perfluoro-n-heptanoic acid | PFHpA | 2000 | | E |
| Perfluoro-n-octanoic acid | PFOA | 2000 | | G |
| Perfluoro-n-nonanoic acid | PFNA | 2000 | | H |
| Perfluoro-n-decanoic acid | PFDA | 2000 | | J |
| Perfluoro-n-undecanoic acid | PFUdA | 2000 | | K |
| Perfluoro-n-dodecanoic acid | PFDoA | 2000 | | M |
| Perfluoro-n-tridecanoic acid | PFTrDA | 2000 | | N |
| Perfluoro-n-tetradecanoic acid | PFTeDA | 2000 | | O |
| Perfluoro-n-hexadecanoic acid | PFHxDA | 2000 | | P |
| Perfluoro-n-octadecanoic acid | PFODA | 2000 | | Q |
| Name | Abbreviation | Concentration (ng/ml) | | Peak Assignment in Figure 1 |
| | | as the salt | as the anion | |
| Potassium perfluoro-1-butanesulfonate | L-PFBS | 2000 | 1770 | C |
| Sodium perfluoro-1-hexanesulfonate | L-PFHxS | 2000 | 1890 | F |
| Sodium perfluoro-1-octanesulfonate | L-PFOS | 2000 | 1910 | I |
| Sodium perfluoro-1-decanesulfonate | L-PFDS | 2000 | 1930 | L |

Certified By: 
B.G. Crittitt

Date: 11/11/2015
(mm/dd/yyyy)

Figure 1: PFAC-MXB; LC/MS Data (Total Ion Current Chromatogram; SIR)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% H₂O / 45% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 95% organic over 10 min and hold for 1 min
before returning to initial conditions in 0.5 min.

Time: 12 min

Flow: 300 μ l/min

MS Parameters

Experiment: SIR of 17 Channels

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (10-70)
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)

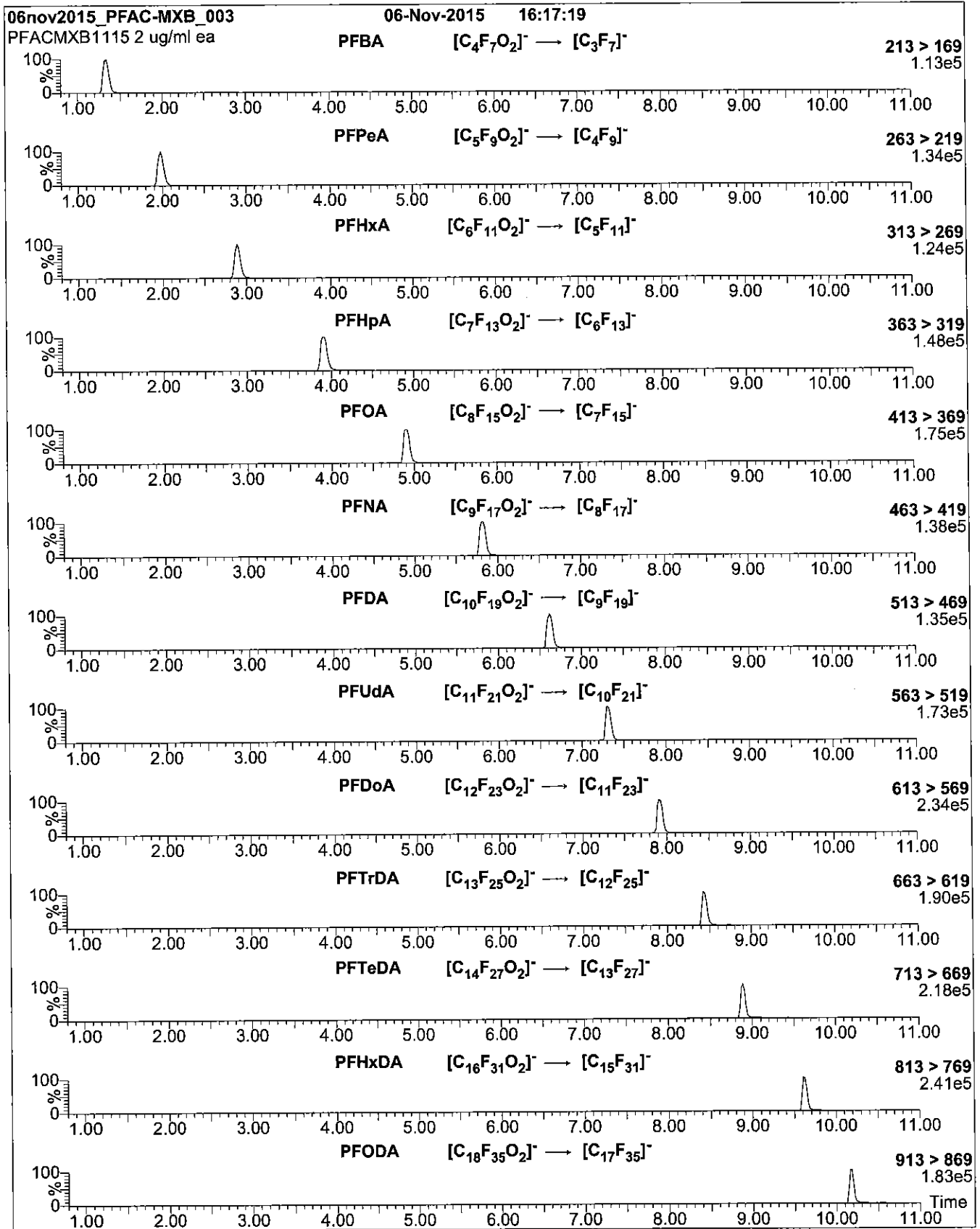
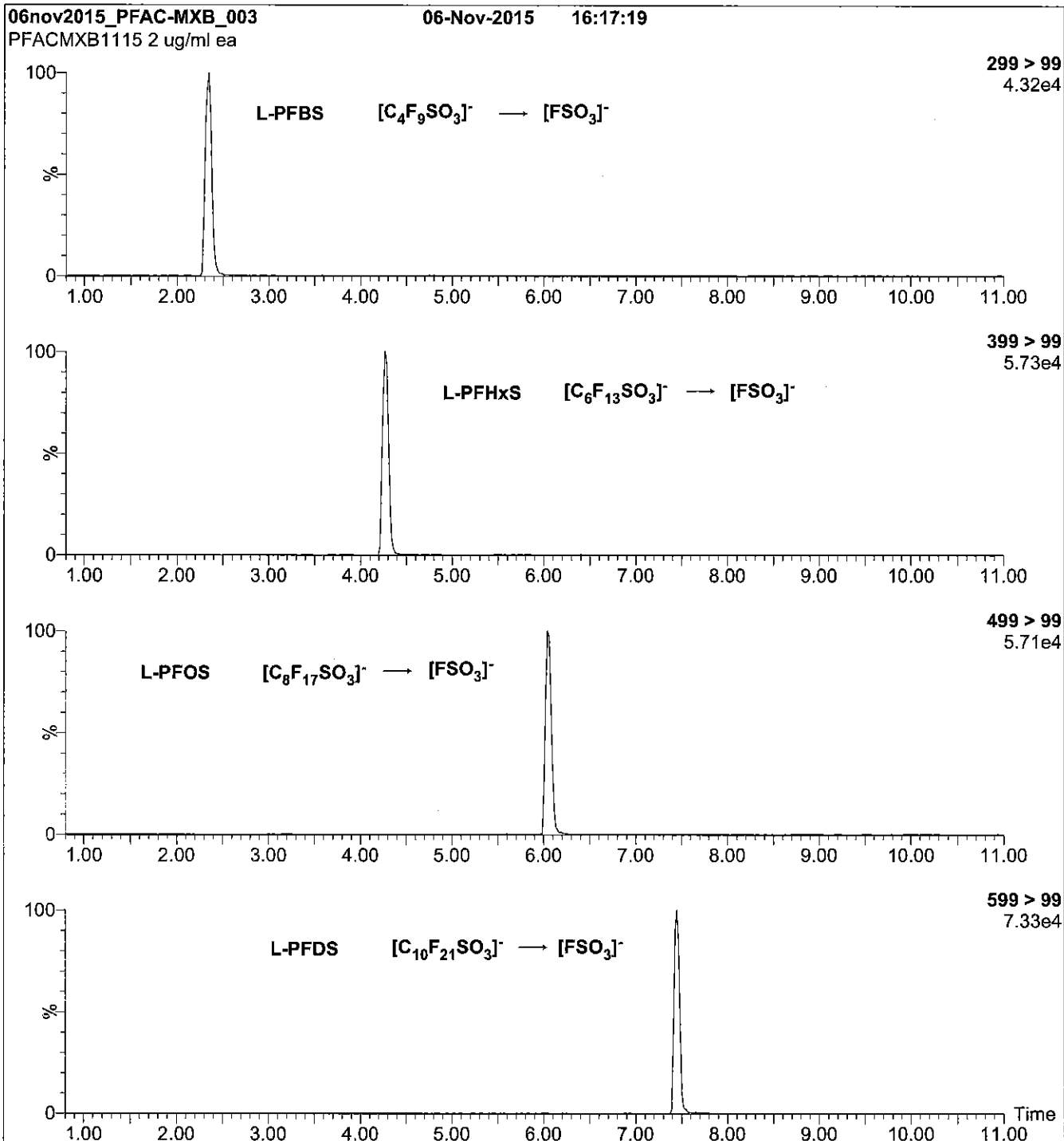


Figure 3: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figures 2 and 3:

Injection: on-column (PFAC-MXB)
 Mobile phase: Same as Figure 1
 Flow: 300 μ /min

MS Parameters
 Collision Gas (mbar) = 3.24e-3
 Collision Energy (eV) = 8-50 (variable)

Reagent

LCPFBA_00006

Scanned
10/16/14

R: SBC 9/13/16



730531
ID: LCPFBA_00005
Exp: 05/27/21 Prpd: SBC
PF-n-butanolic acid



730532
ID: LCPFBA_00006
Exp: 05/27/21 Prpd: SBC
PF-n-butanolic acid



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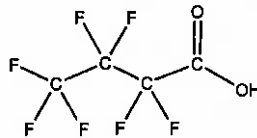
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanolic acid

LOT NUMBER: PFBA0516

STRUCTURE:

CAS #: 375-22-4



MOLECULAR FORMULA: C₄HF₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 214.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/27/2016
EXPIRY DATE: (mm/dd/yyyy) 05/27/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole.eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:

B.G. Chittim

Date: 05/31/2016
(mm/dd/yyyy)

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where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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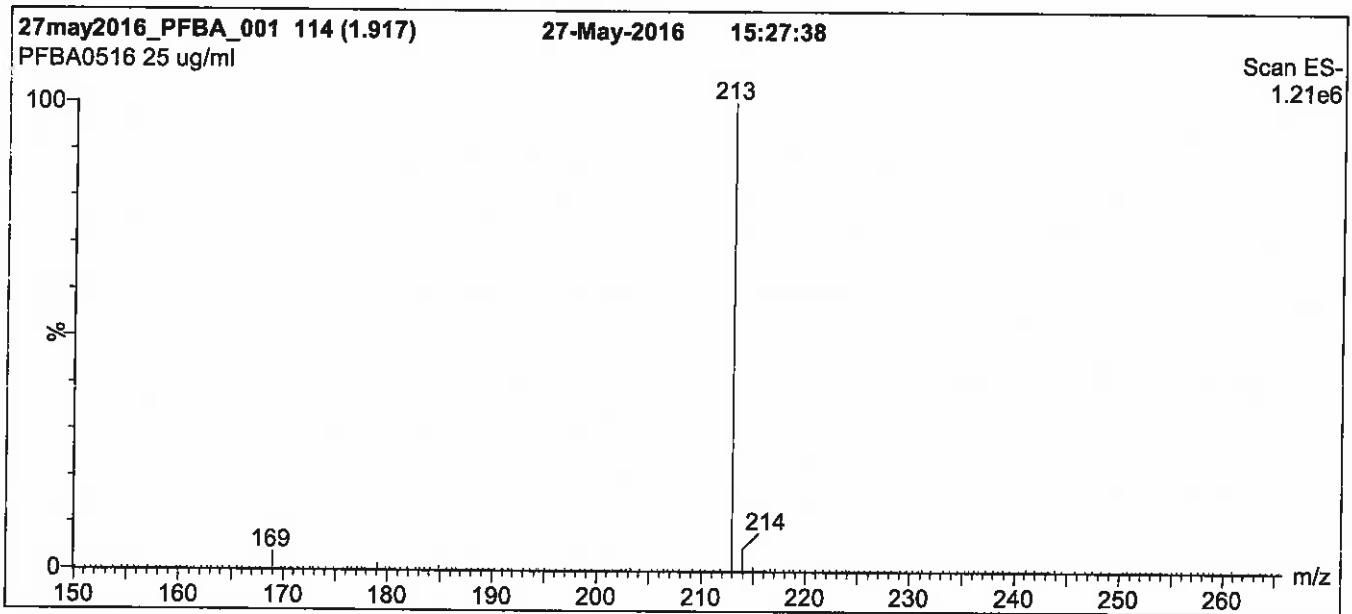
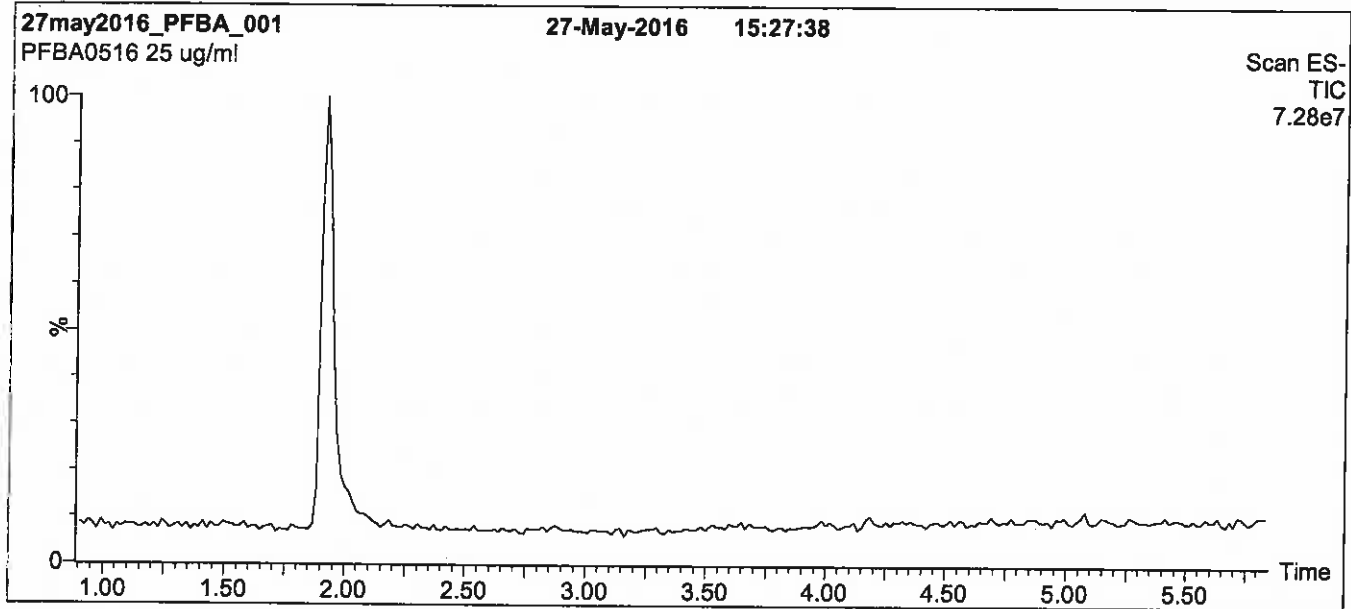
QUALITY MANAGEMENT:

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Figure 1: PFBA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

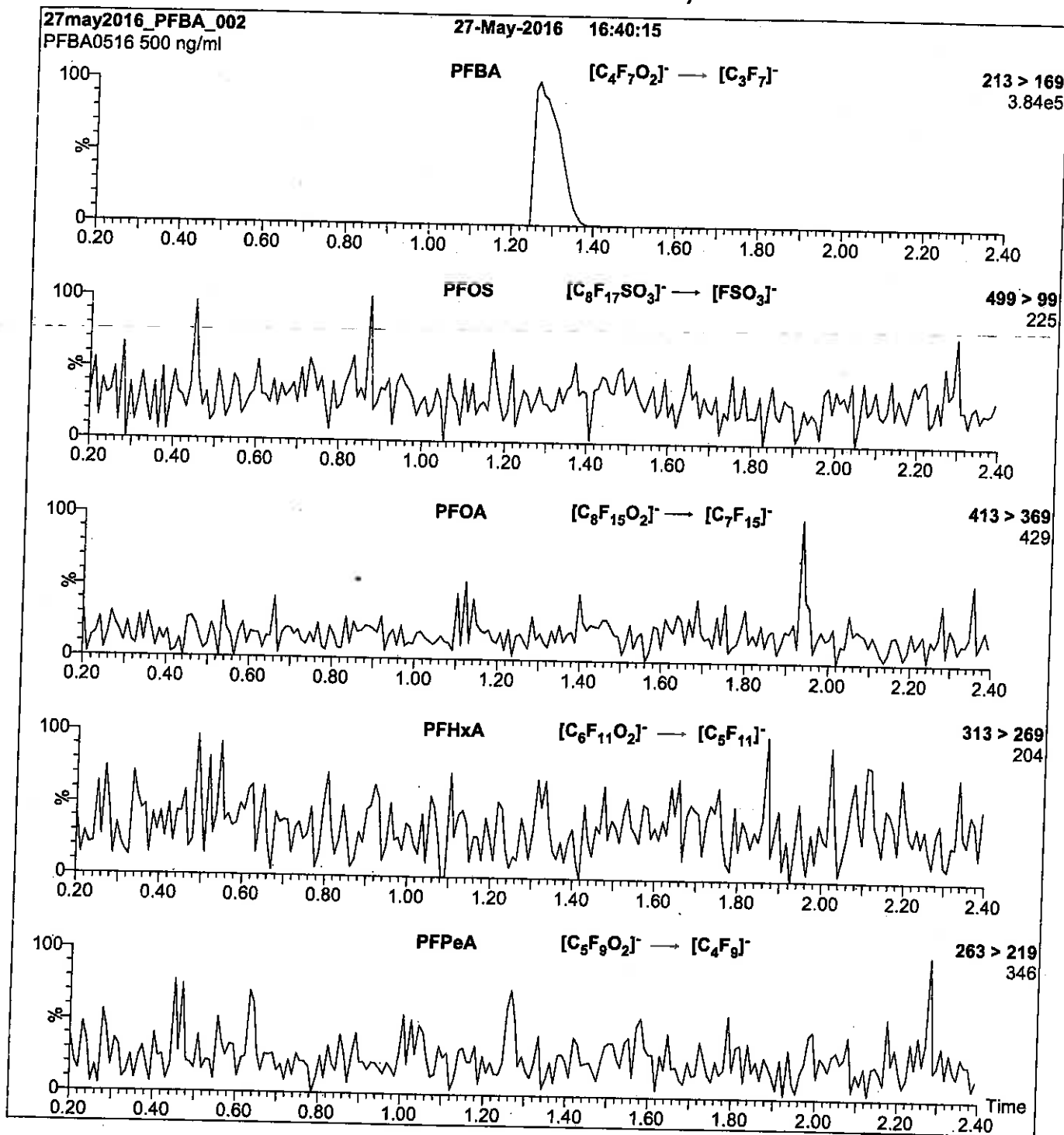
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFBA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 10

Reagent

LCPFBS_00006

R: SBC 9/13/16



730511
 ID: LCPFBS_00005
 Exp: 03/15/21 Pripd: SBC
 PF-1-butanesulfonate K sa



730512
 ID: LCPFBS_00006
 Exp: 03/15/21 Pripd: SBC
 PF-1-butanesulfonate K sa



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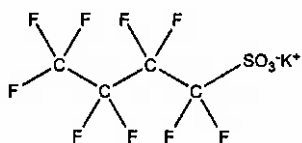
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
COMPOUND: Potassium perfluoro-1-butanesulfonate

LOT NUMBER: LPFBS0316

STRUCTURE:

CAS #: 29420-49-3



MOLECULAR FORMULA: C₄F₉SO₃K
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
 44.2 ± 2.2 µg/ml (PFBS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/15/2016
EXPIRY DATE: (mm/dd/yyyy) 03/15/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 338.19
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim

Date: 03/21/2016
 (mm/dd/yyyy)

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where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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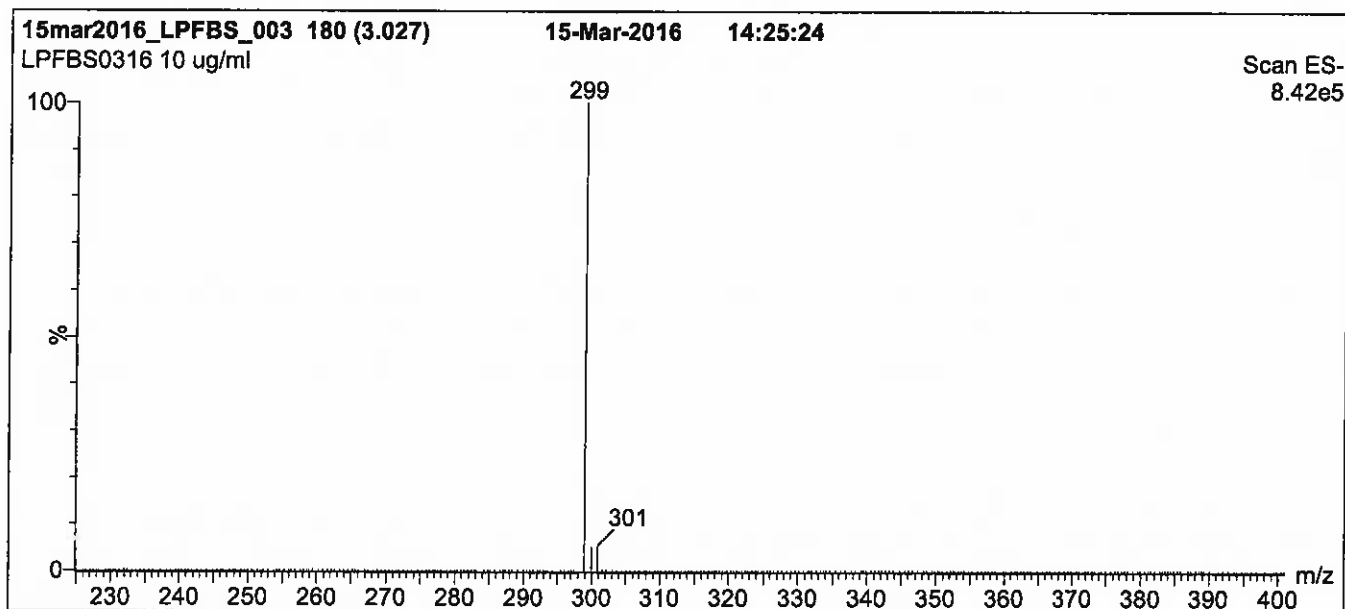
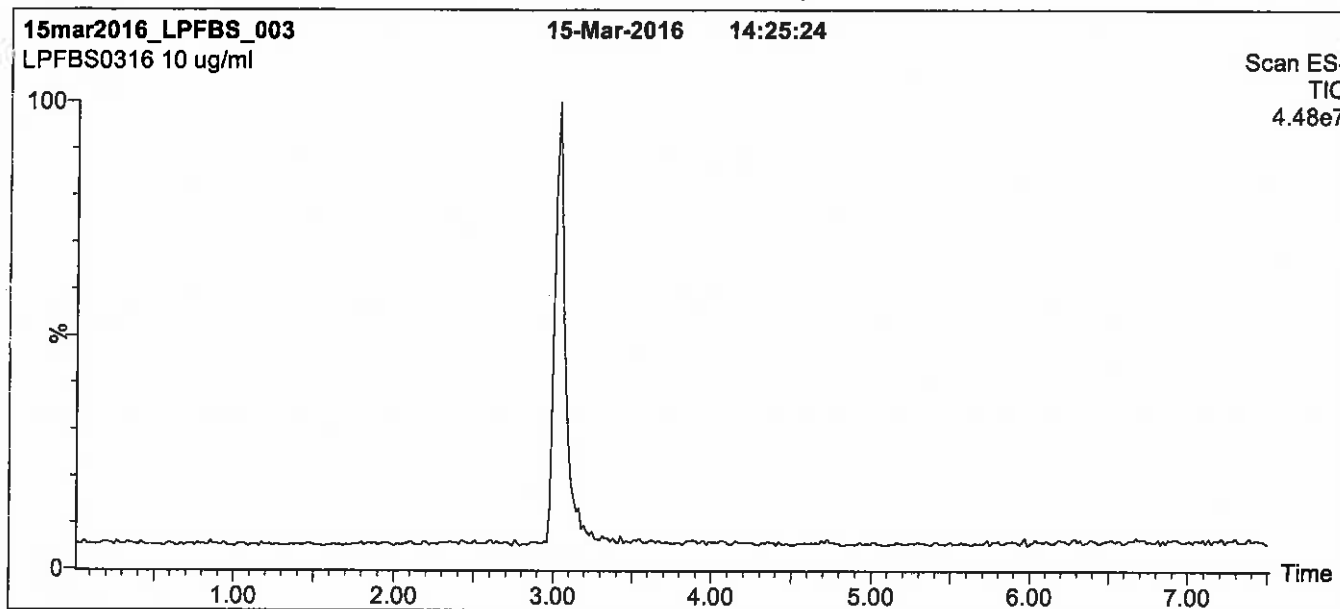
QUALITY MANAGEMENT:

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Figure 1: L-PFBS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 40% (80:20 MeOH:ACN) / 60% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

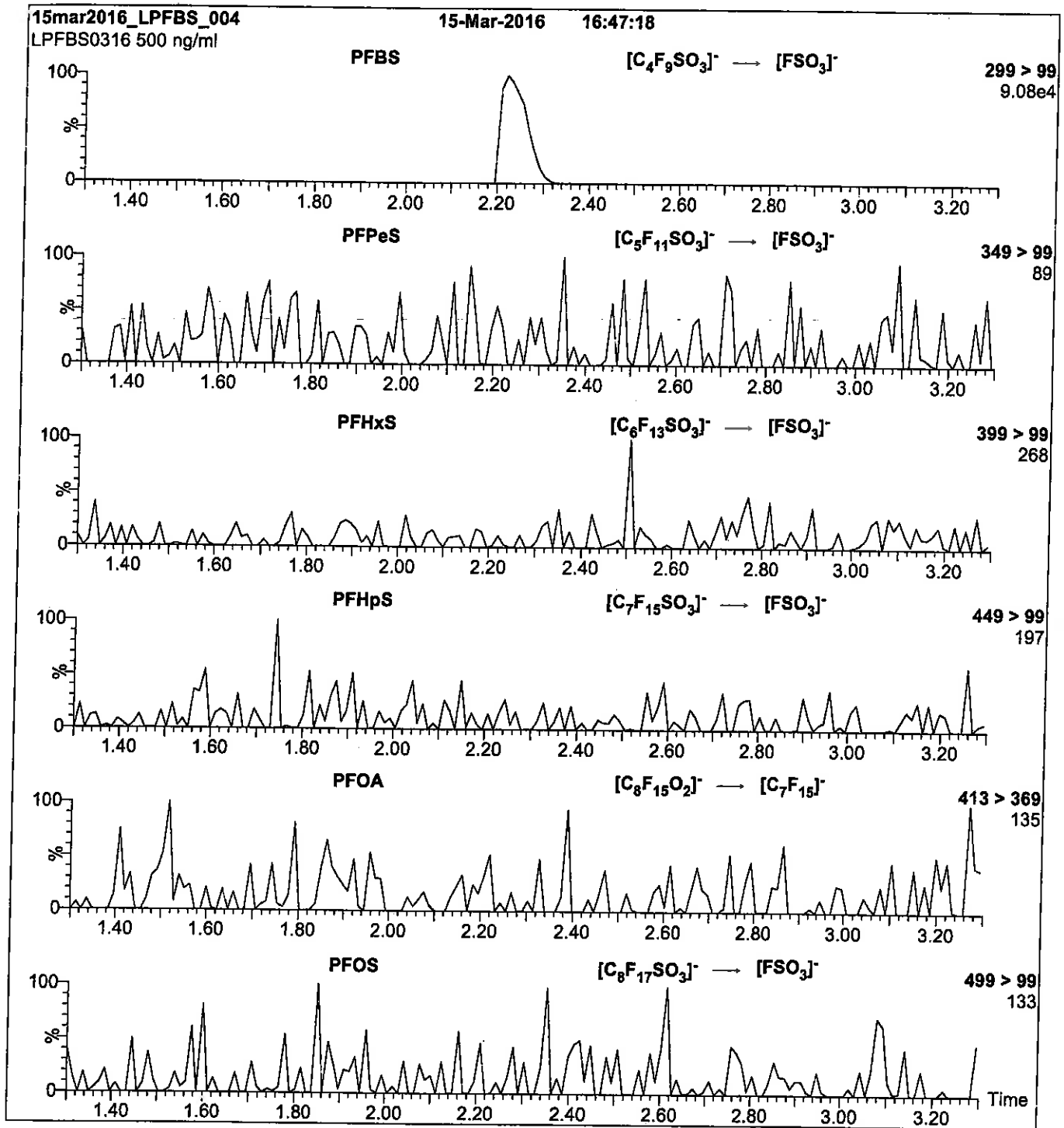
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 40.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFBS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml L-PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
 Collision Energy (eV) = 25

Reagent

LCPFDA_00006

R: SBC 9/13/16
Scanned 10/14/16 SR



730620
ID: LCPFDA_00006
Exp: 05/31/21 Prep: SBC
PF-n-decanoic acid



730621
ID: LCPFDA_00007
Exp: 05/31/21 Prep: SBC
PF-n-decanoic acid

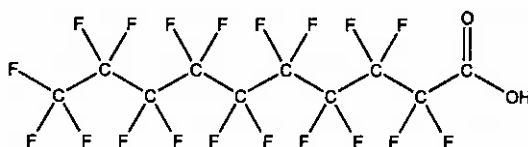


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFDA **LOT NUMBER:** PFDA0516
COMPOUND: Perfluoro-n-decanoic acid

STRUCTURE: **CAS #:** 335-76-2



MOLECULAR FORMULA: C₁₀HF₁₉O₂ **MOLECULAR WEIGHT:** 514.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/31/2016
EXPIRY DATE: (mm/dd/yyyy) 05/31/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 06/13/2016
(mm/dd/yyyy)

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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LIMITED WARRANTY:

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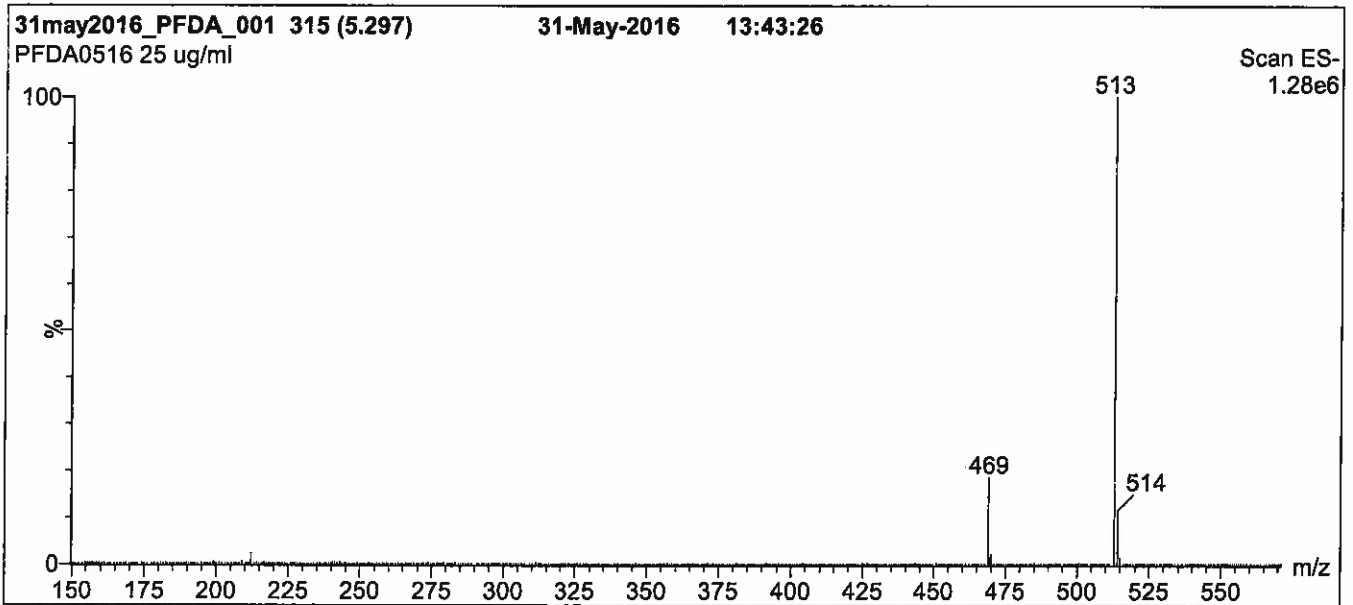
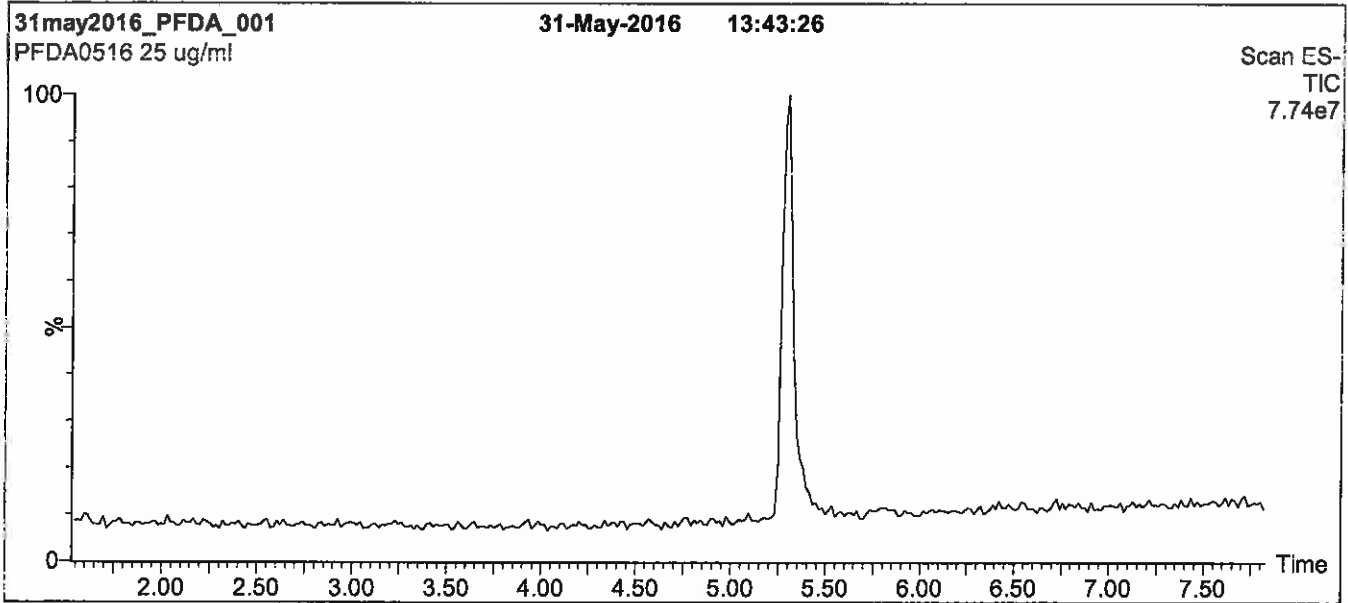
QUALITY MANAGEMENT:

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Figure 1: PFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min

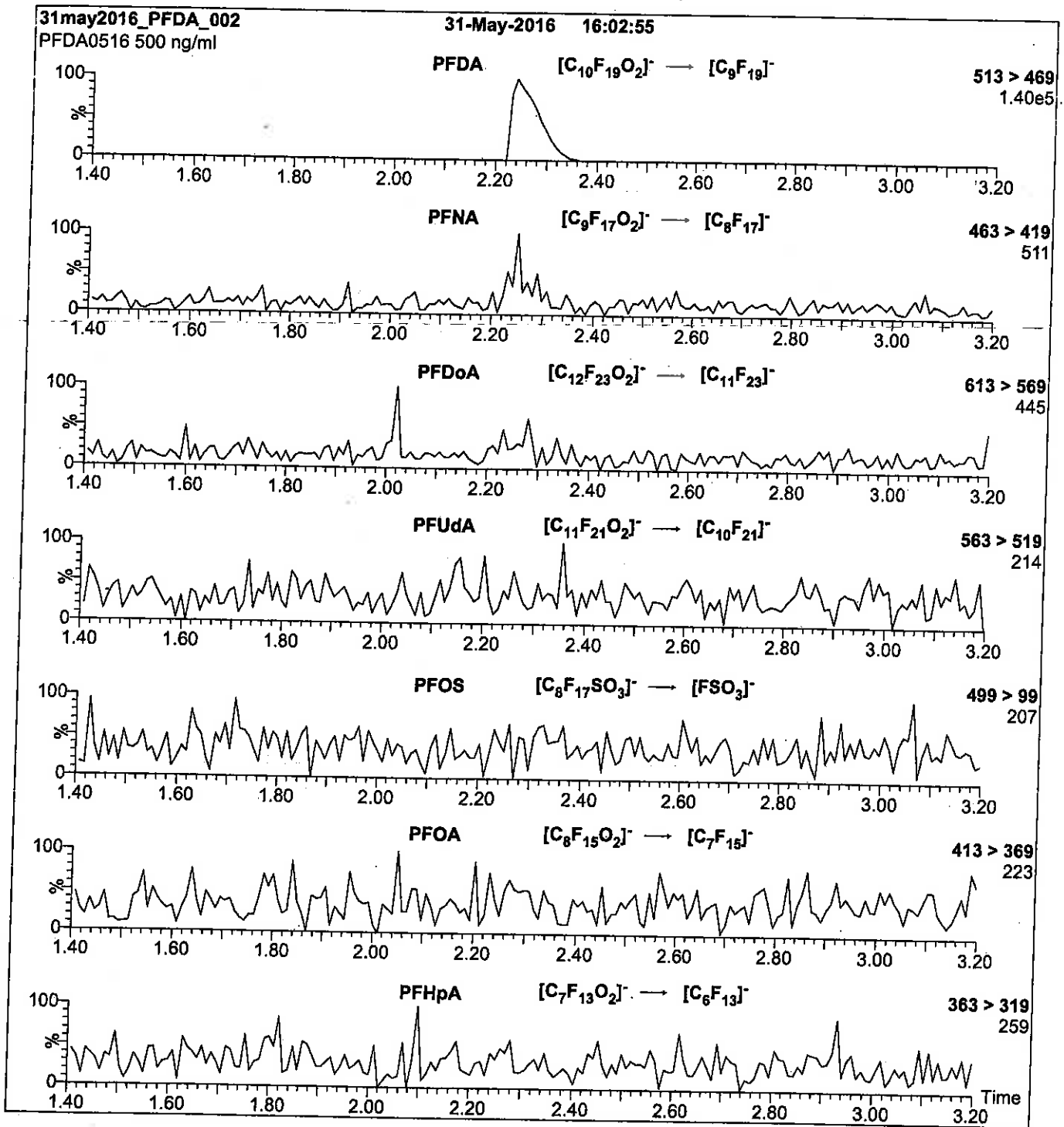
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: PFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCPFDA_00007

R: SBC 9/13/16
Scanned 10/14/16 SR



730620
ID: LCPFDA_00006
Exp: 05/31/21 Prep: SBC
PF-n-decanoic acid



730621
ID: LCPFDA_00007
Exp: 05/31/21 Prep: SBC
PF-n-decanoic acid

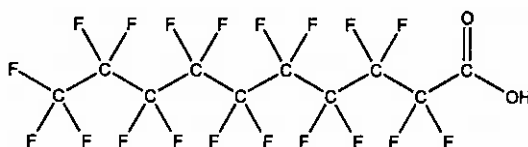


**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: PFDA **LOT NUMBER:** PFDA0516
COMPOUND: Perfluoro-n-decanoic acid

STRUCTURE: **CAS #:** 335-76-2



MOLECULAR FORMULA: C₁₀HF₁₉O₂ **MOLECULAR WEIGHT:** 514.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/31/2016
EXPIRY DATE: (mm/dd/yyyy) 05/31/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 06/13/2016
(mm/dd/yyyy)

**Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com**

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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LIMITED WARRANTY:

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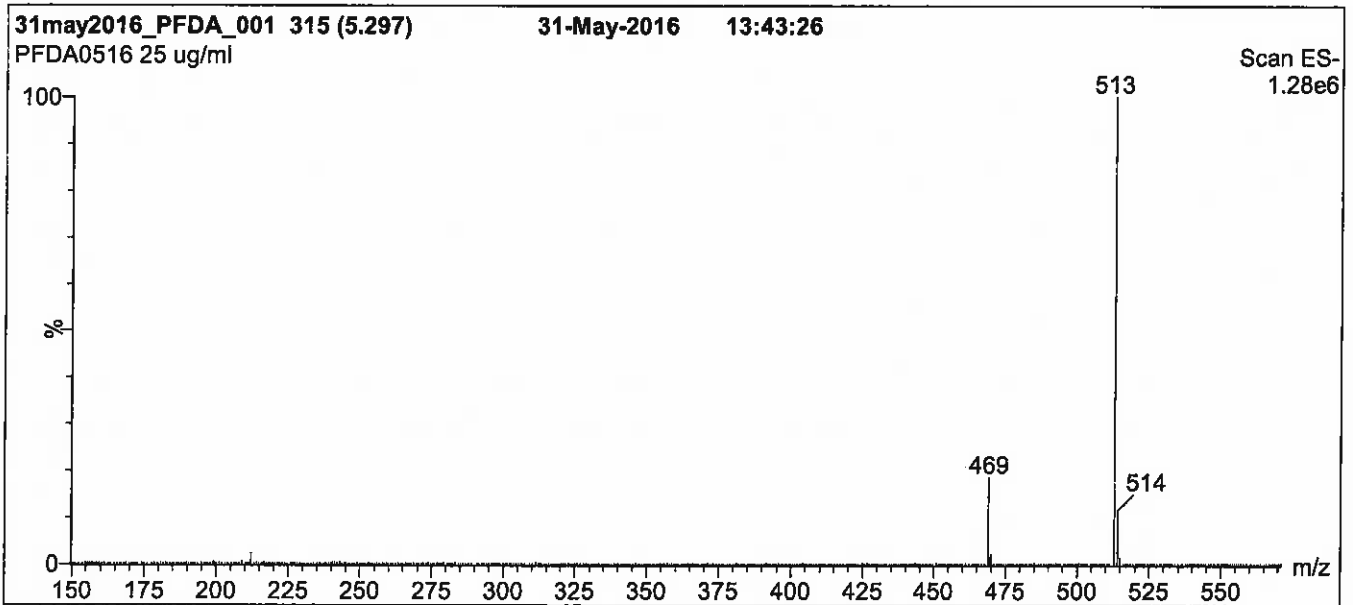
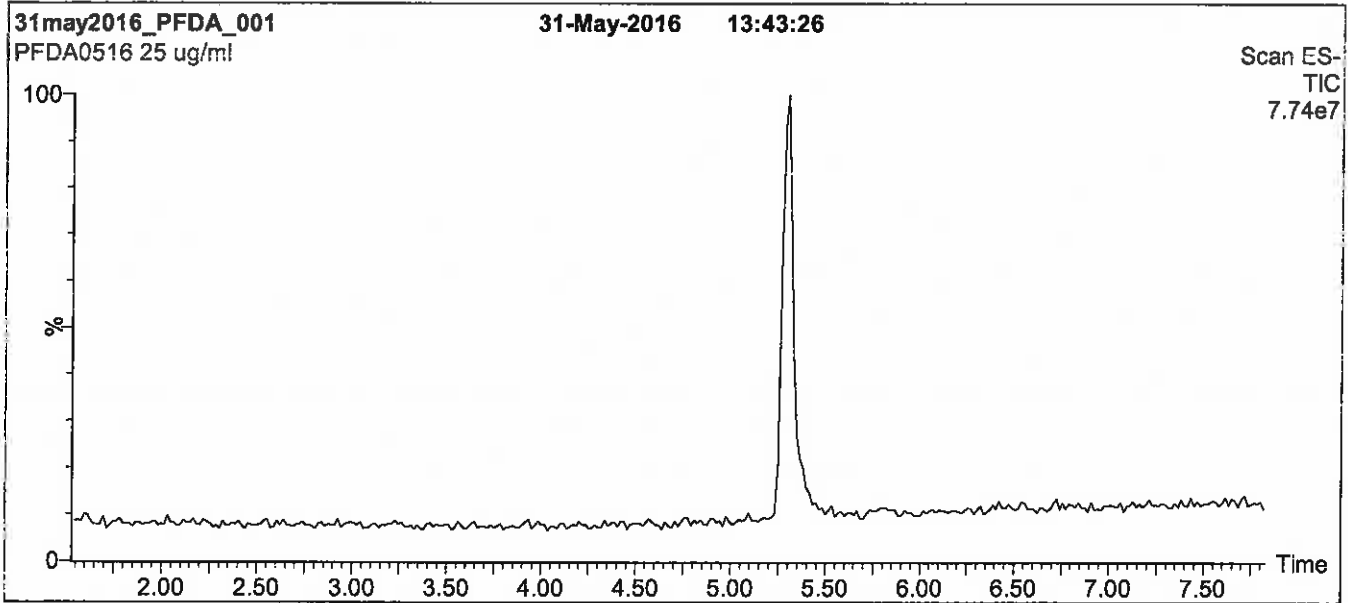
QUALITY MANAGEMENT:

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Figure 1: PFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min

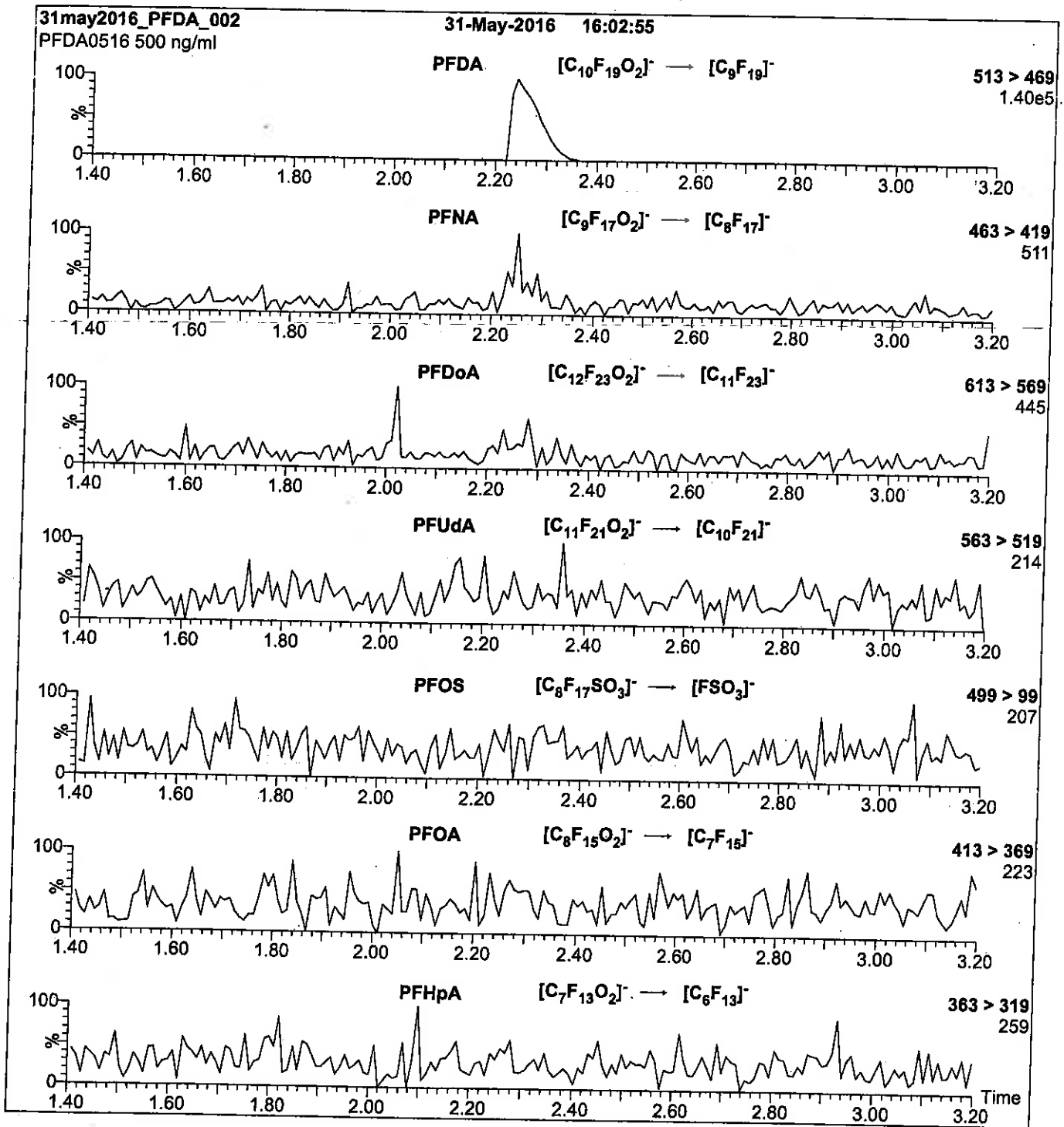
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: PFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00006

r: 12/21/16 SPV



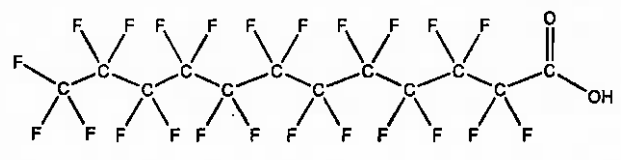
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFD0A
COMPOUND: Perfluoro-n-dodecanoic acid

LOT NUMBER: PFD0A0516

STRUCTURE: **CAS #:** 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 614.10
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/31/2016
EXPIRY DATE: (mm/dd/yyyy) 05/31/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 06/02/2016
B.G. Chittim (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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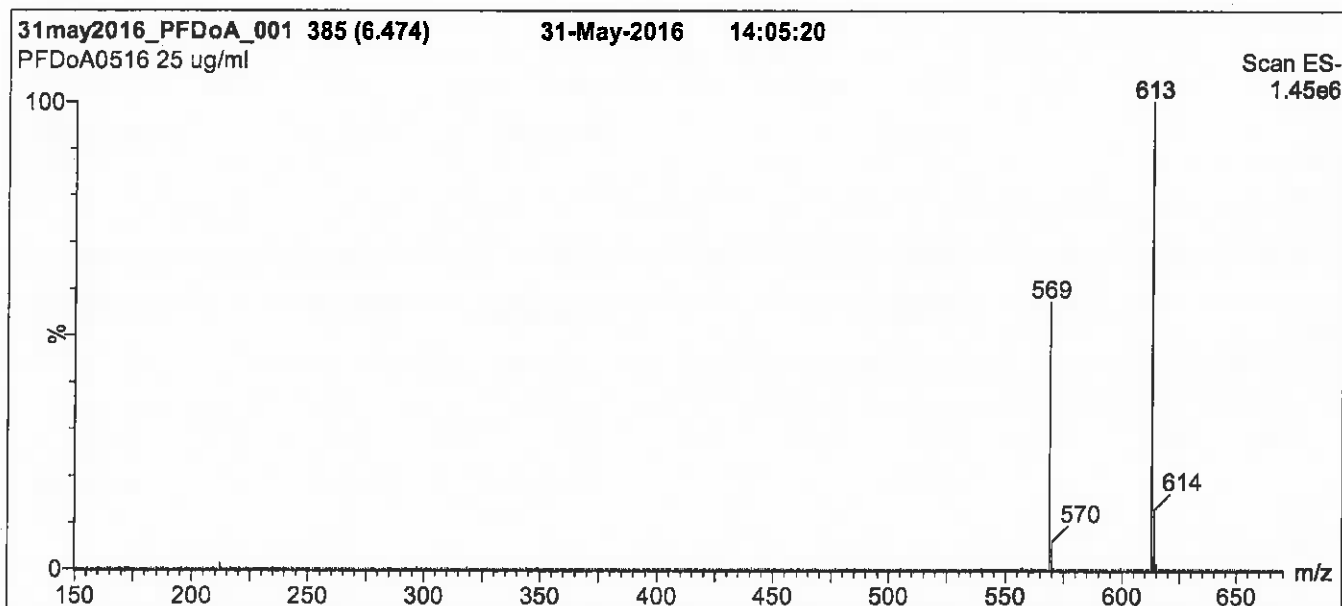
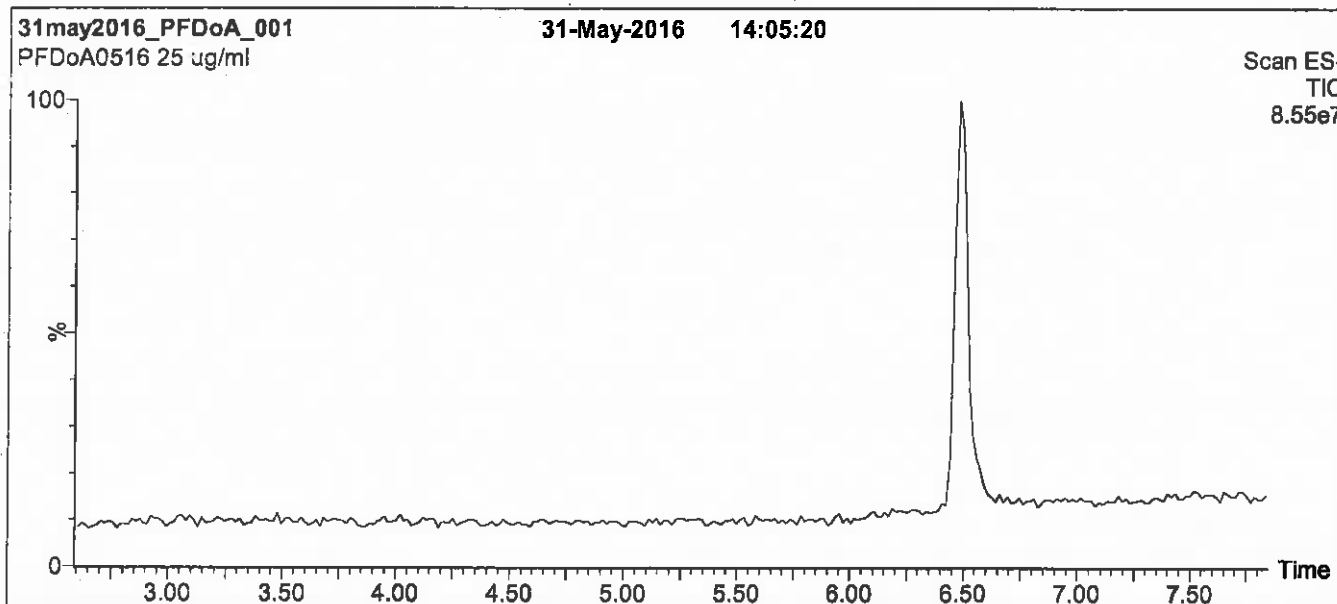
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Figure 1: PFDoA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min

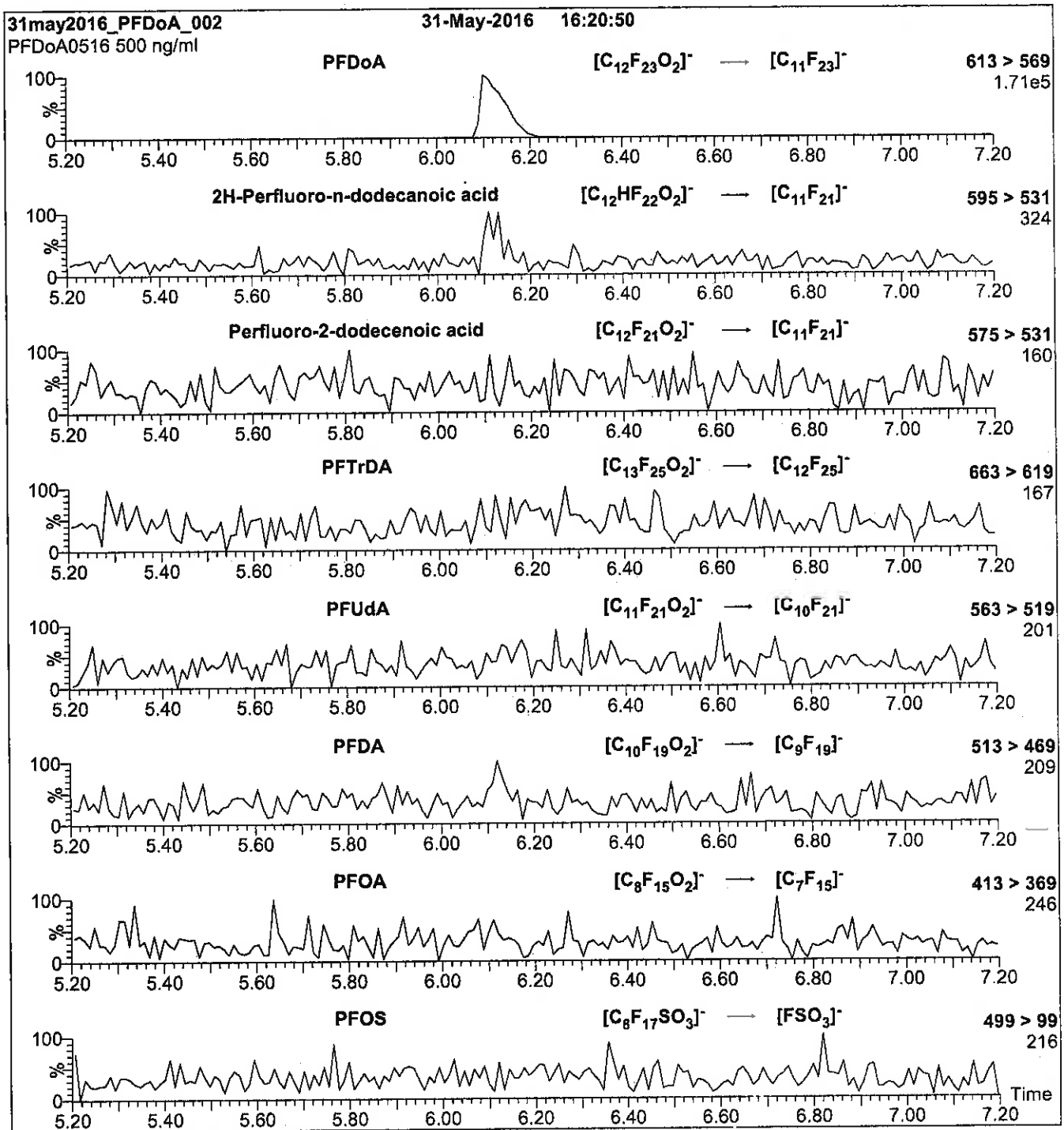
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 20.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

Figure 2: PFDoA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFDoA)

MS Parameters

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Flow: 300 μ l/min

Reagent

LCPFDoA_00007

r: 12/21/16 SKV

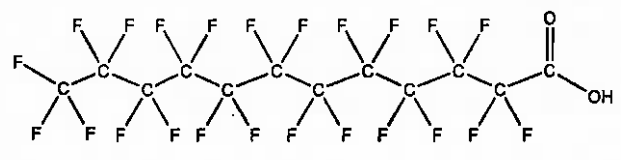


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFD0A **LOT NUMBER:** PFD0A0516
COMPOUND: Perfluoro-n-dodecanoic acid

STRUCTURE: **CAS #:** 307-55-1



MOLECULAR FORMULA: C₁₂HF₂₃O₂ **MOLECULAR WEIGHT:** 614.10
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/31/2016
EXPIRY DATE: (mm/dd/yyyy) 05/31/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 06/02/2016
(mm/dd/yyyy)

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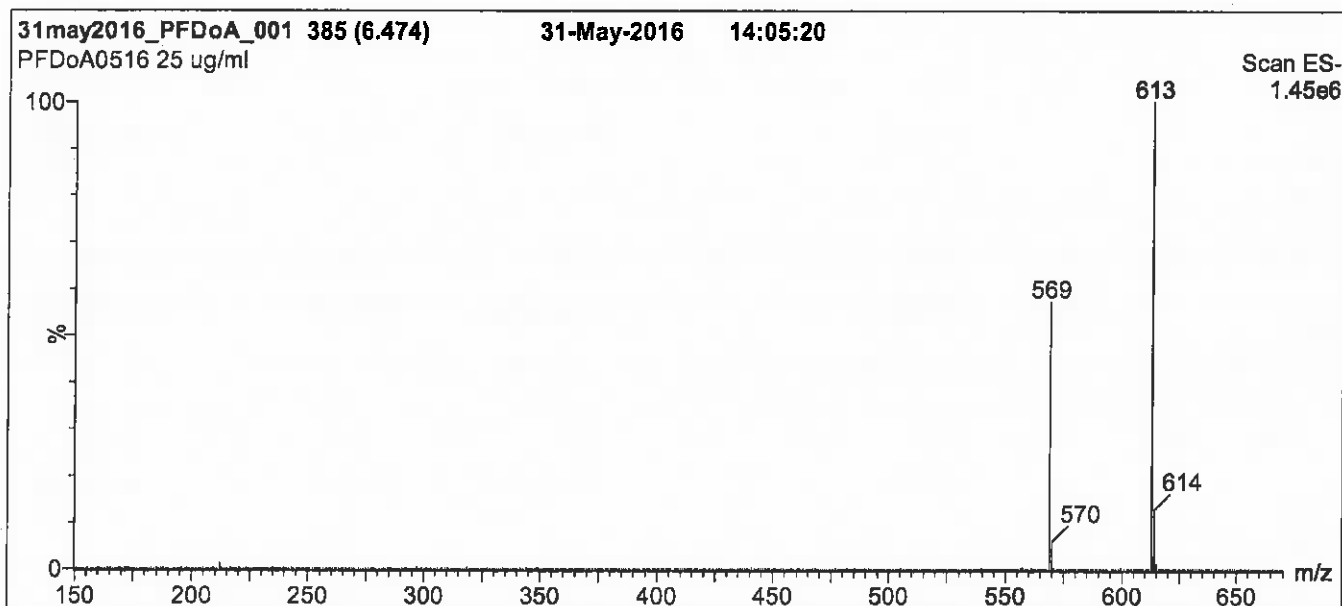
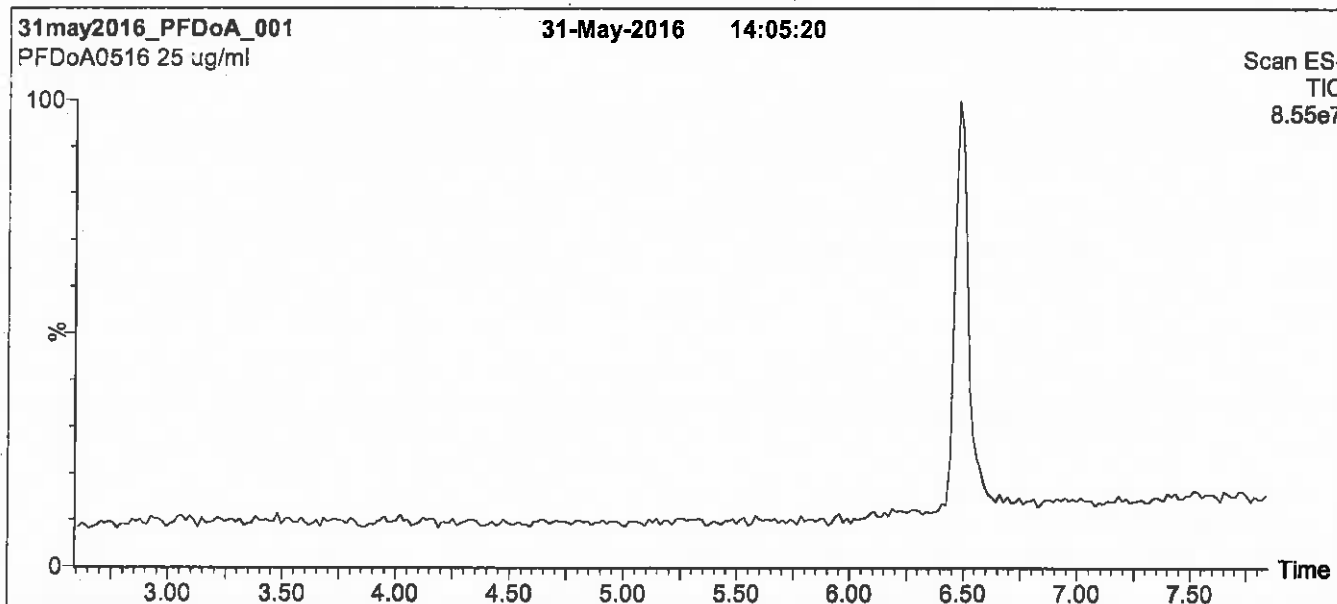
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MS: Micromass Quattro *micro* API MS

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Column: Acquity UPLC BEH Shield RP₁₈,
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

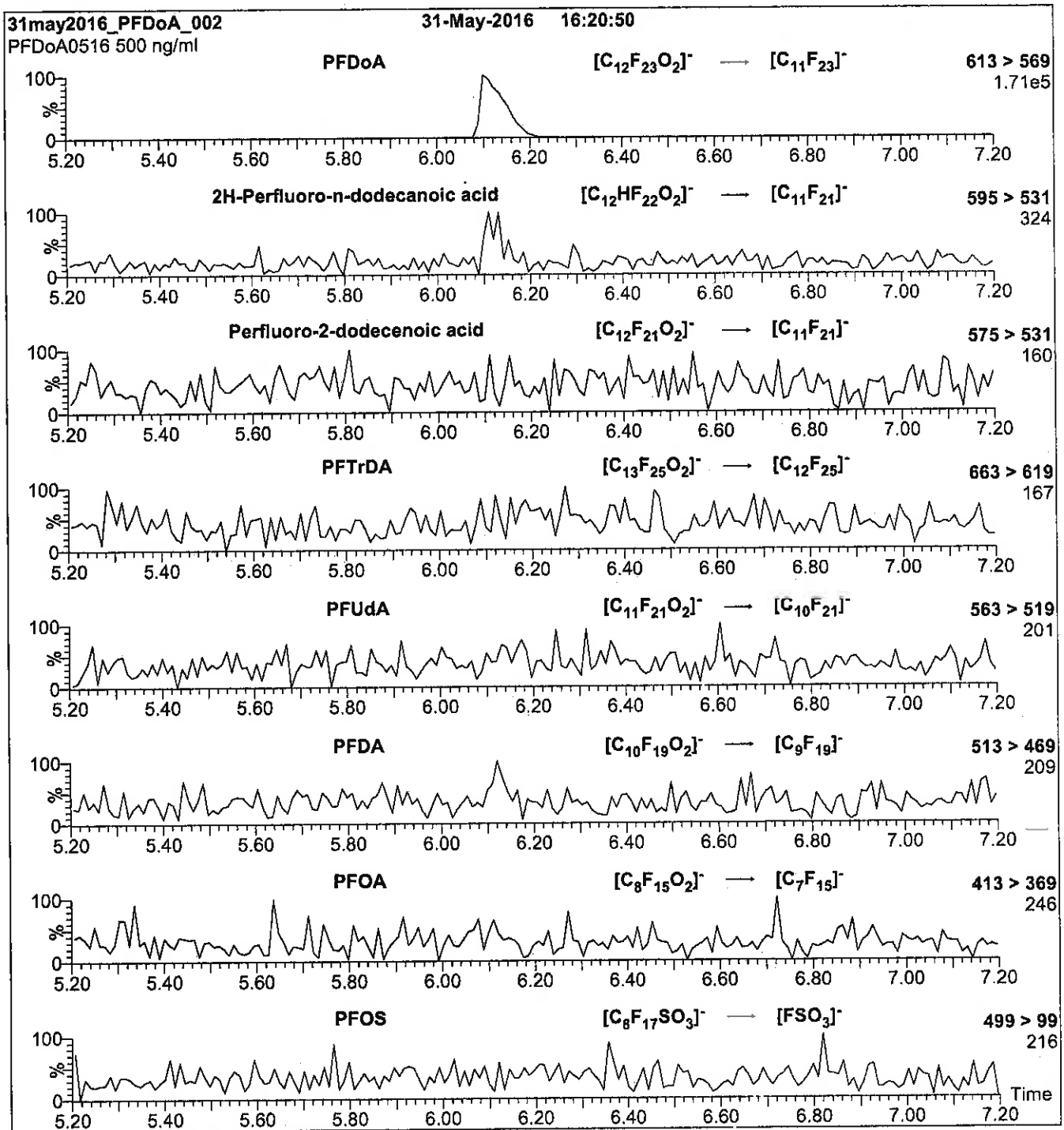
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFDoA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml PFDaA)

MS Parameters

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Collision Gas (mbar) = 3.39e-3
 Collision Energy (eV) = 13

Flow: 300 μ l/min

Reagent

LCPFDS_00005



605240
 ID: LCPFDS_00005
 Exp: 07/02/20 Prep: CBW
 PF-1-decanesulfonate sodi

Rec. 3/29/16 JRB

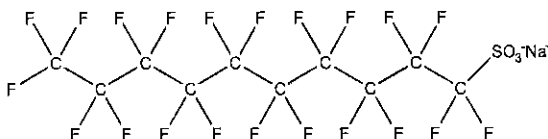


WELLINGTON
 LABORATORIES

CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: L-PFDS **LOT NUMBER:** LPFDS0615
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE: **CAS #:** 2806-15-7



MOLECULAR FORMULA: C₁₀F₂₁SO₃Na **MOLECULAR WEIGHT:** 622.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 48.2 ± 2.4 µg/ml (PFDS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/02/2015
EXPIRY DATE: (mm/dd/yyyy) 07/02/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

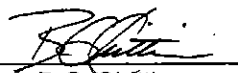
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 12/07/2015
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

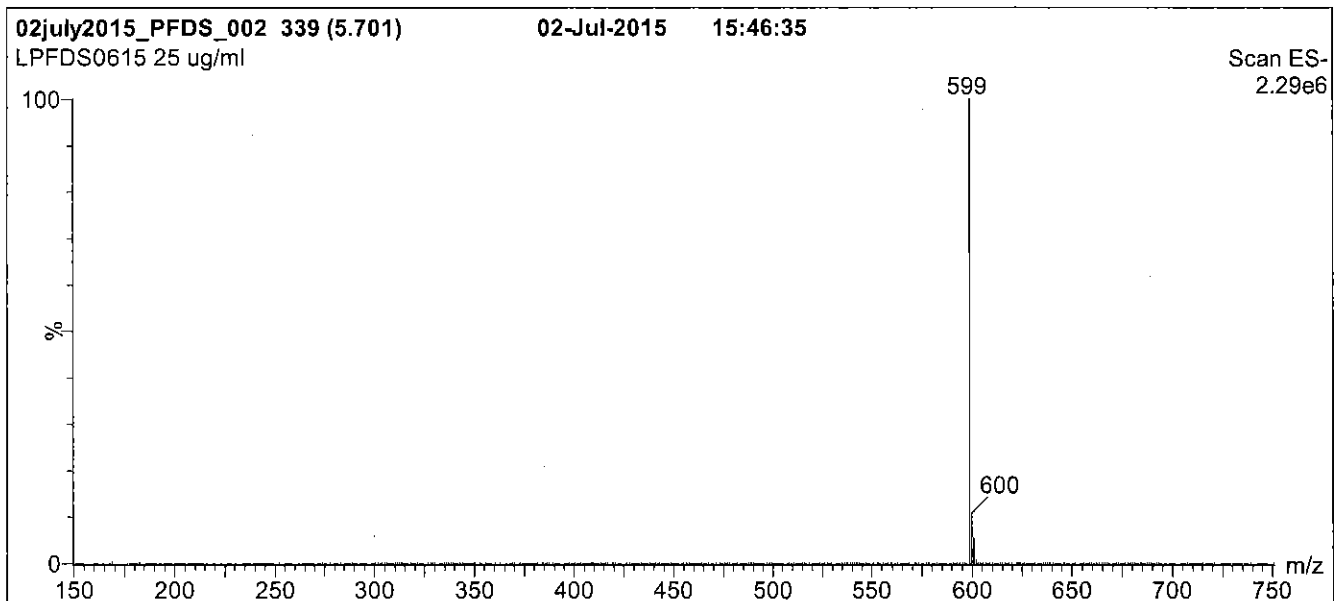
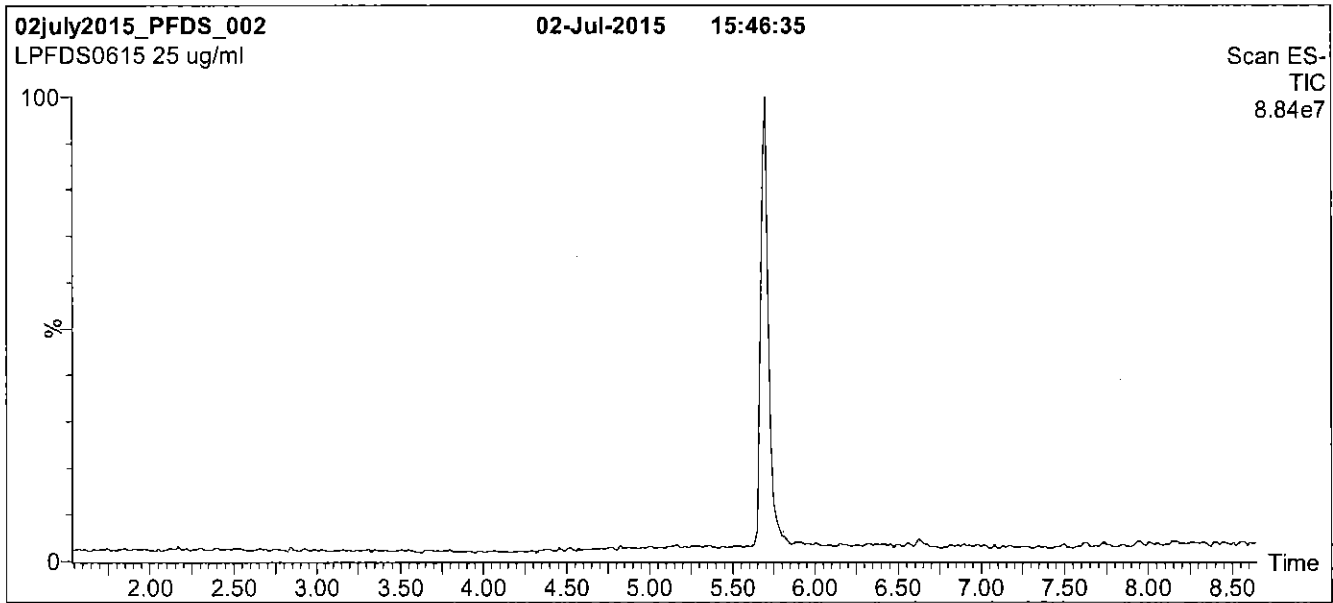
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: L-PFDS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

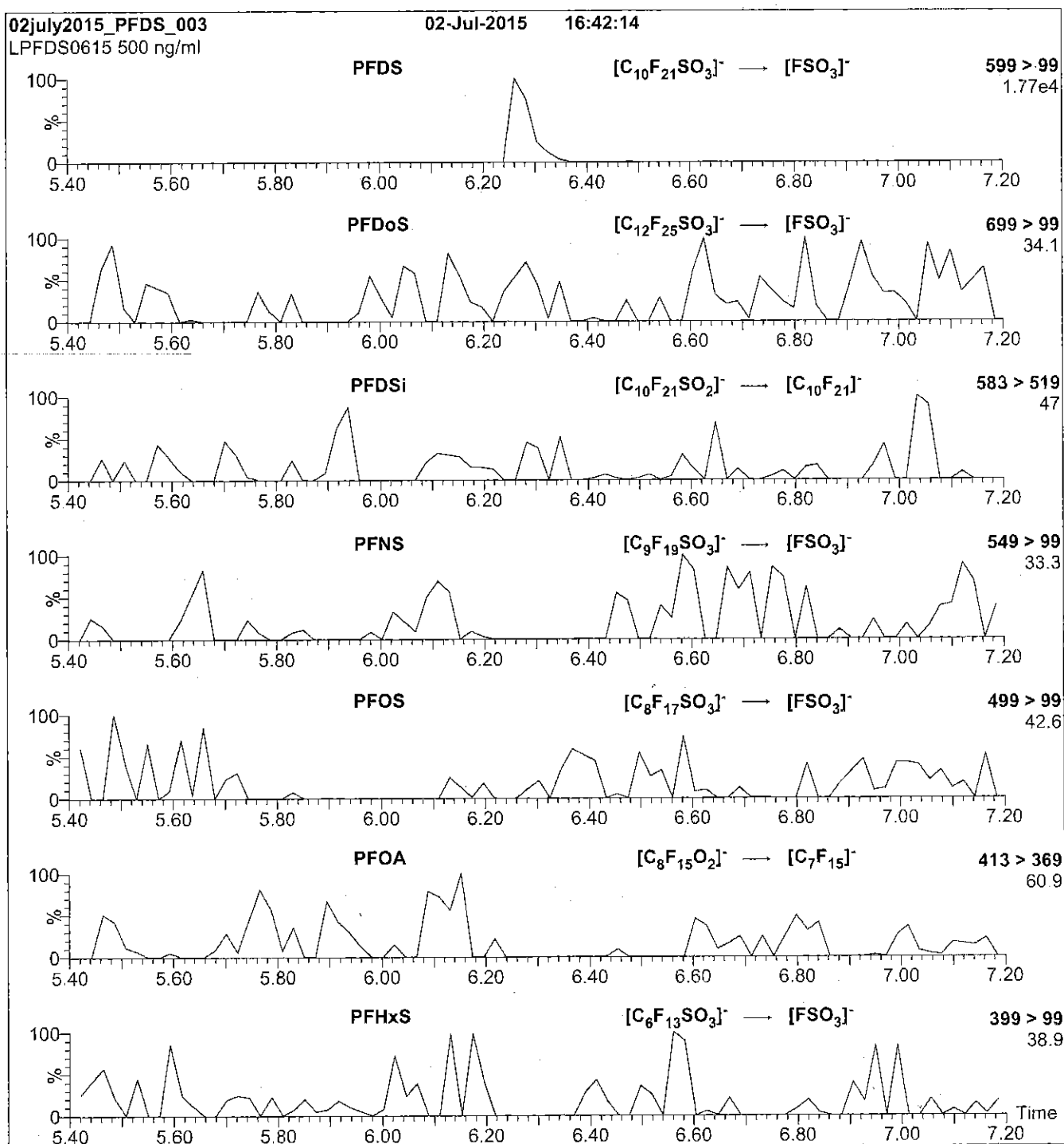
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 70.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFDS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFDS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 50

Reagent

LCPFDS_00007

Scanned 10/14/16 R: 88C 9/13/16



730549

ID: LCPFDS_00006

Exp: 05/24/21 Ppd: SBC

PF-1-decanesulfonate sodi



730550

ID: LCPFDS_00007

Exp: 05/24/21 Ppd: SBC

PF-1-decanesulfonate sodi

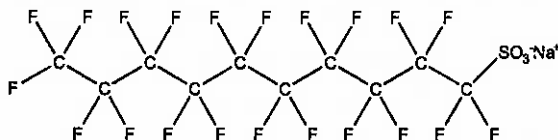


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDS **LOT NUMBER:** LPFDS0516
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE: **CAS #:** 2806-15-7



MOLECULAR FORMULA: C₁₀F₂₁SO₃Na **MOLECULAR WEIGHT:** 622.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
48.2 ± 2.4 µg/ml (PFDS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/24/2016
EXPIRY DATE: (mm/dd/yyyy) 05/24/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

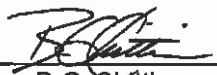
DOCUMENTATION/ DATA ATTACHED:

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- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 05/26/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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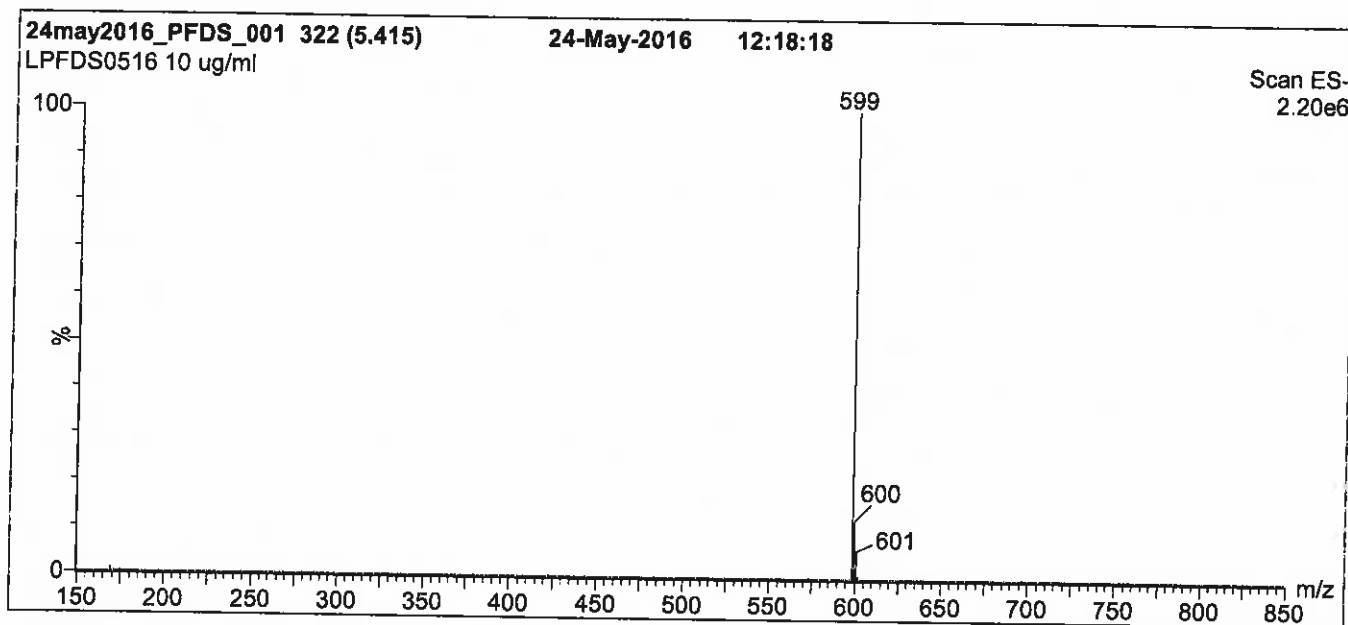
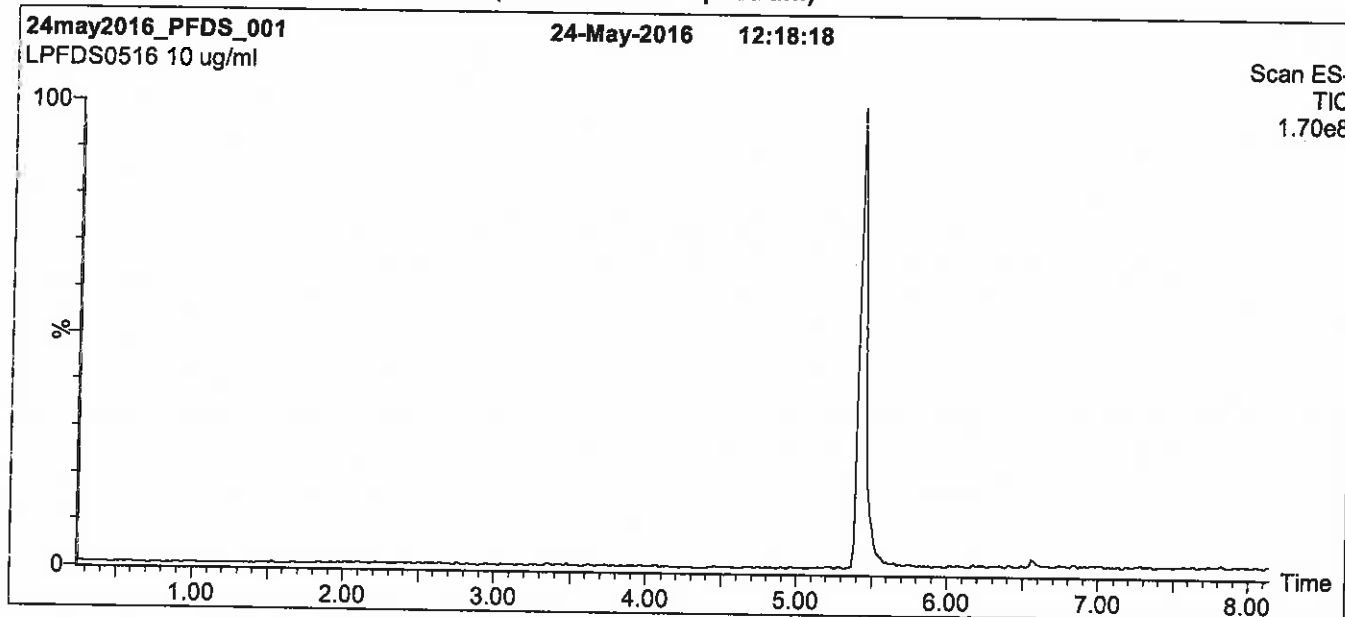
QUALITY MANAGEMENT:

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Figure 1: L-PFDS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 55% (80:20 MeOH:ACN) / 45% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min

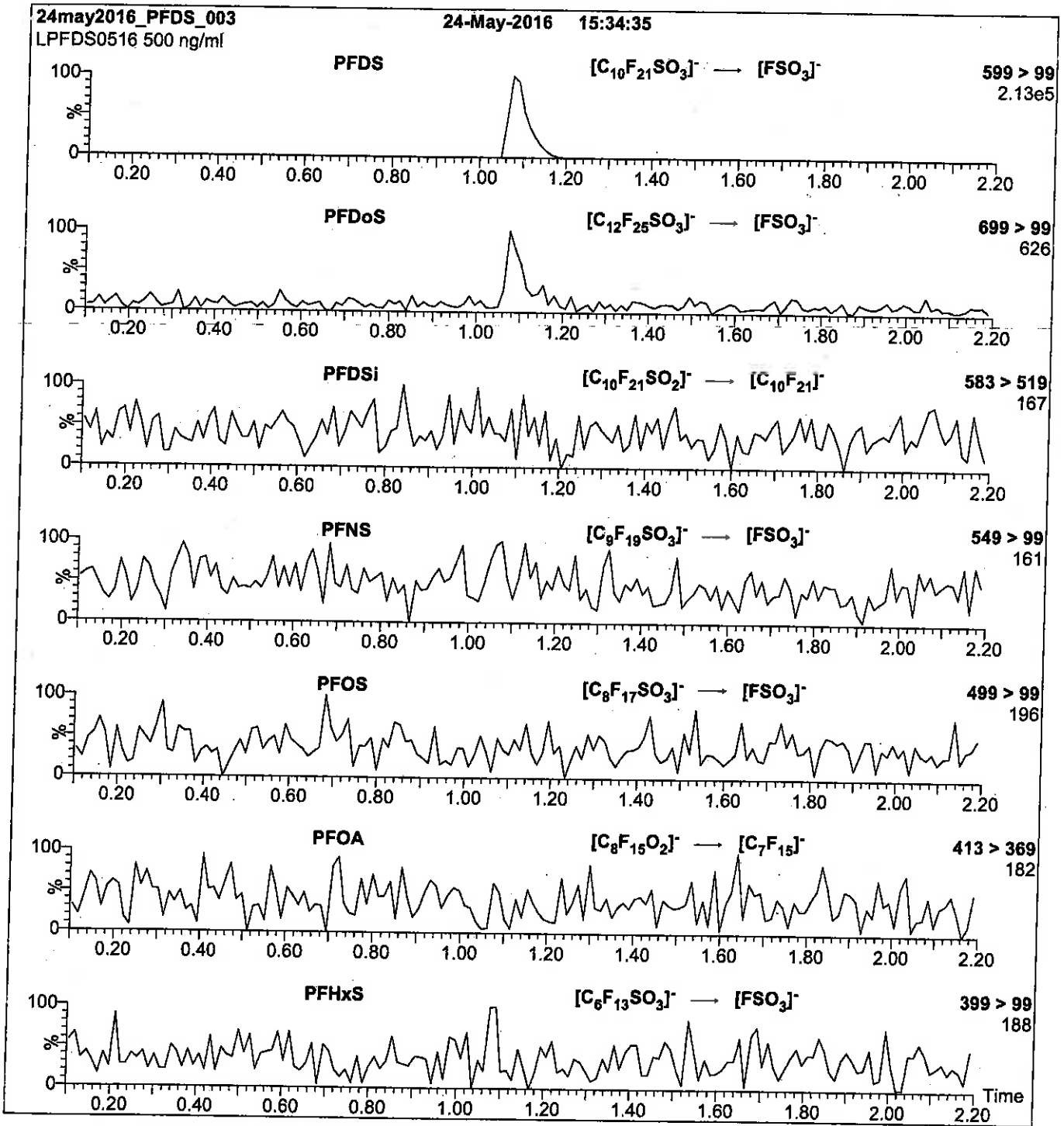
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 70.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFDS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml L-PFDS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.70e-3
 Collision Energy (eV) = 50

Reagent

LCPFHpA_00006

Scanned R: SBC 9/13/16
10/14/16 JK



730517
ID: LCPFHpa_00006
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid



730518
ID: LCPFHpa_00007
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid



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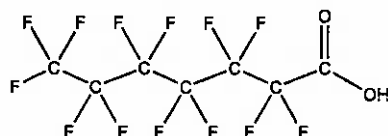
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: C₇HF₁₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/22/2016
EXPIRY DATE: (mm/dd/yyyy) 01/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 02/02/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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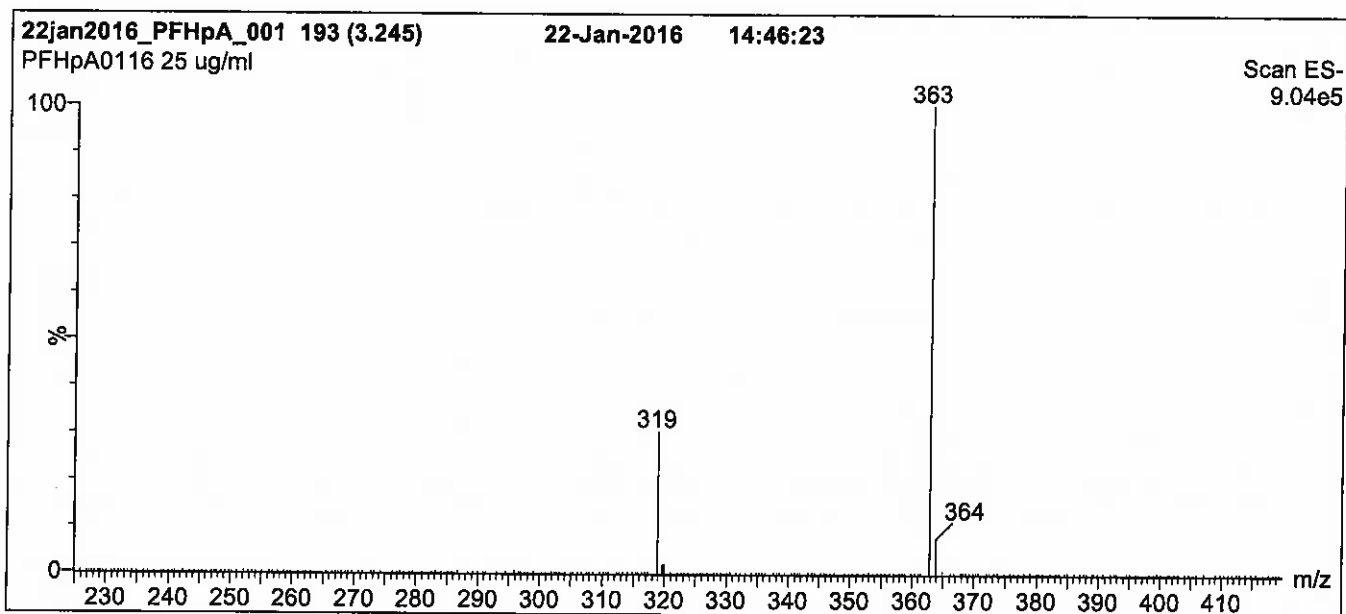
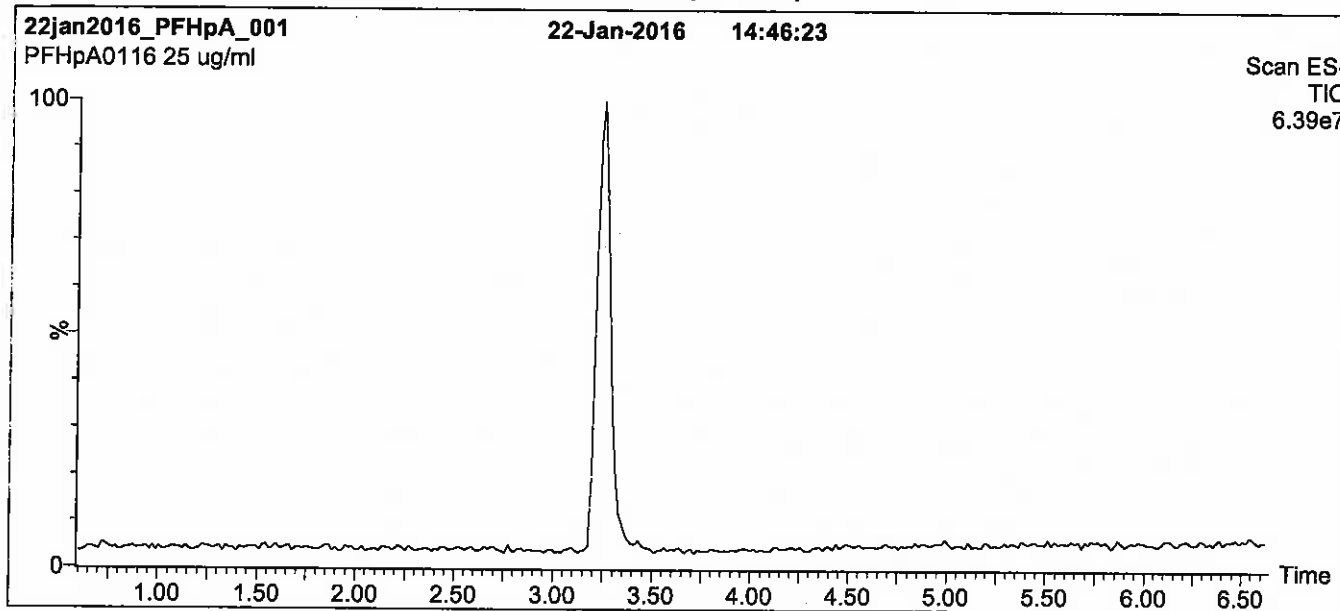
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Figure 1: PFHpA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 55% (80:20 MeOH:ACN) / 45% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for
 2 min before returning to initial conditions in 0.5 min.
 Time: 10 min

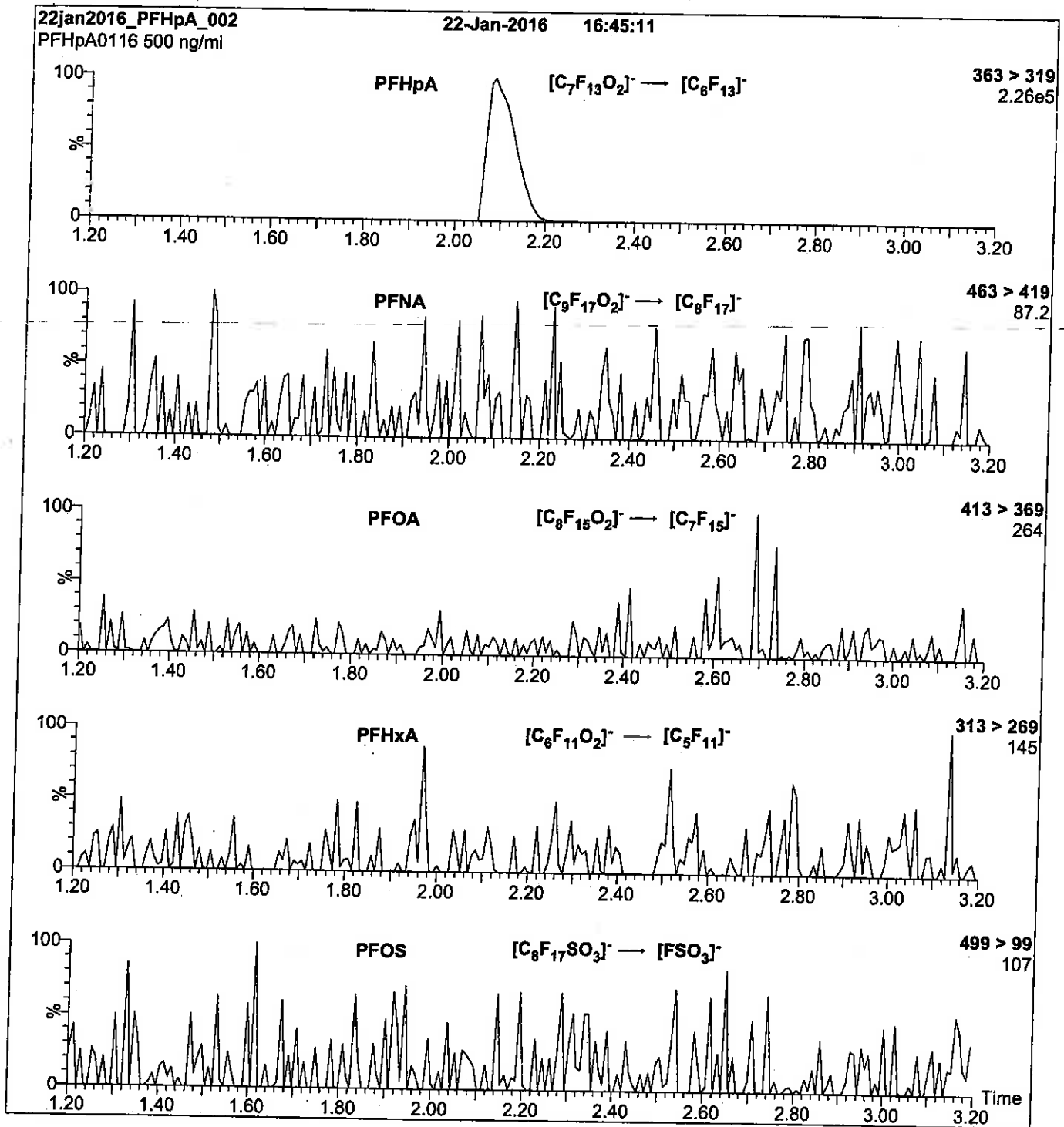
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

Reagent

LCPFHpA_00007

Scanned R: 8BC 9/13/16
10/14/16 JK



730517
ID: LCPFHpa_00006
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid



730518
ID: LCPFHpa_00007
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid



WELLINGTON LABORATORIES

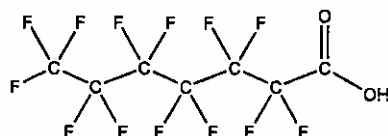
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: C₇HF₁₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/22/2016
EXPIRY DATE: (mm/dd/yyyy) 01/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By: 
B.G. Chittim

Date: 02/02/2016
(mm/dd/yyyy)

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

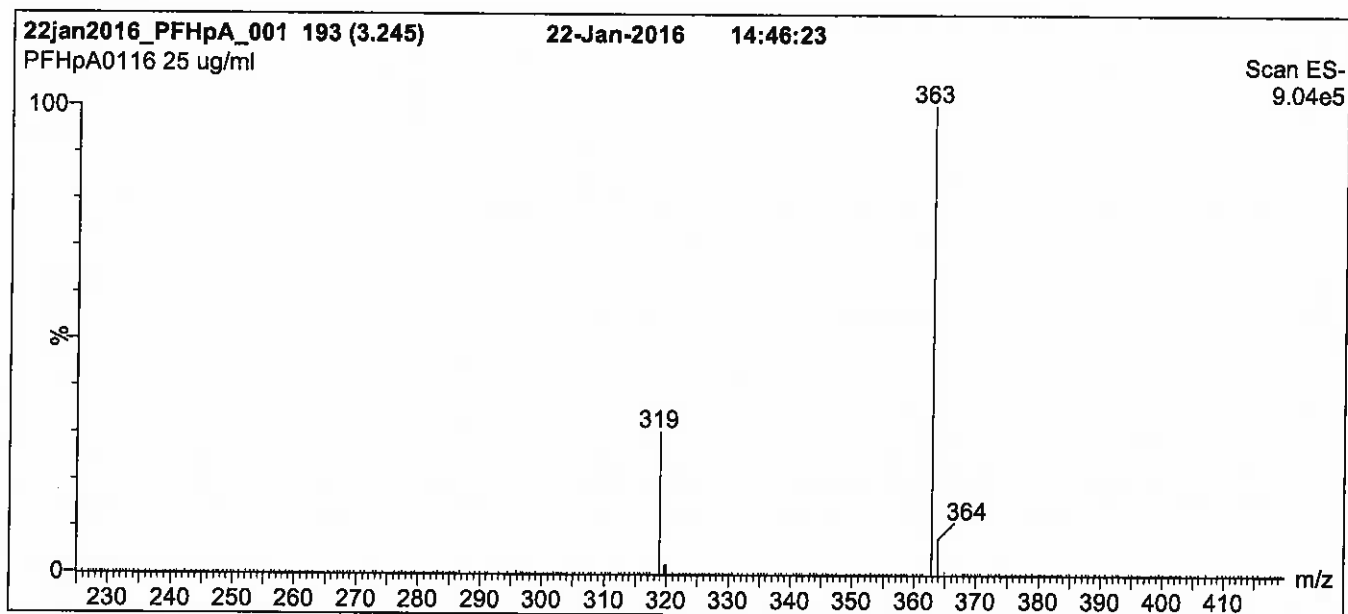
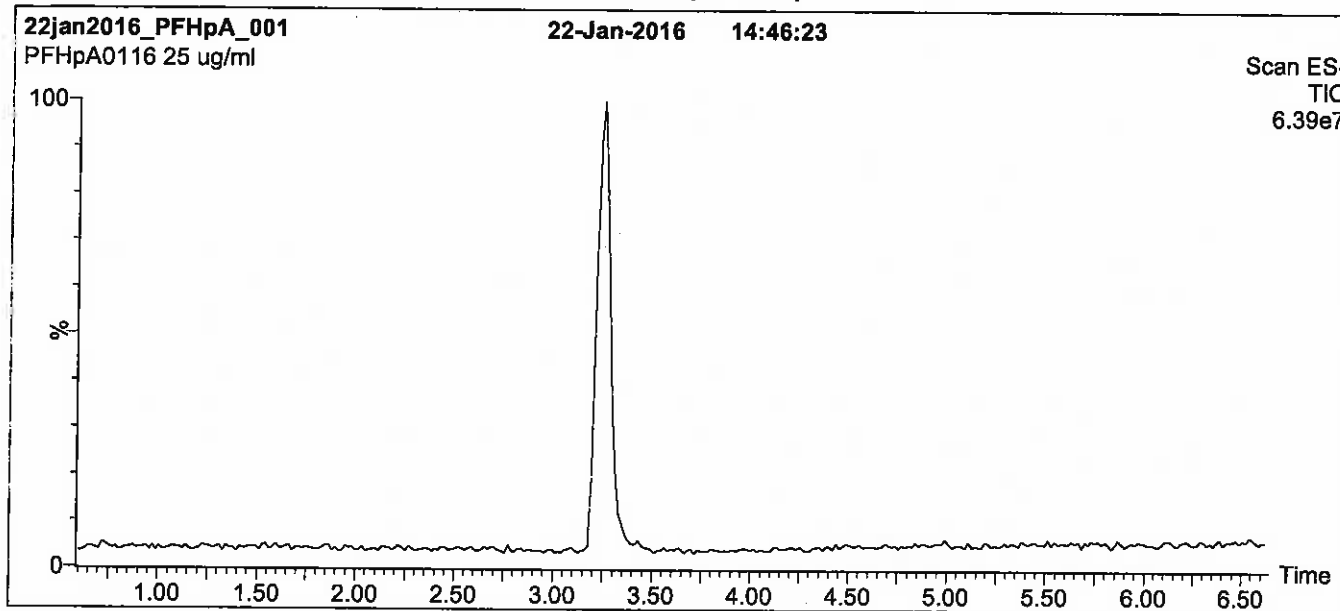
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFHpA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

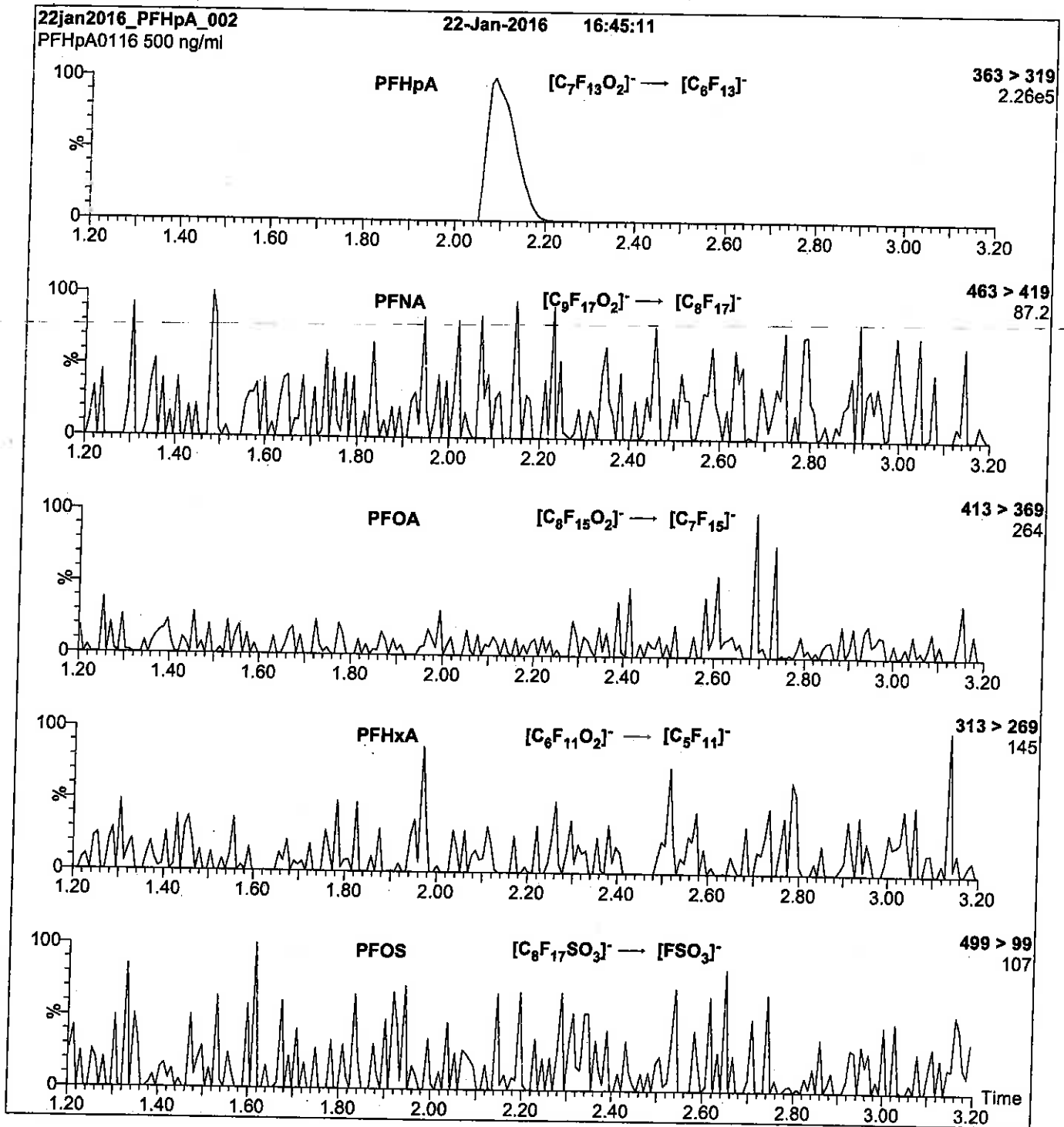
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

Reagent

LCPFHpS_00010

Scanned
10/14/16 SP
R: 8BC 9/13/16



730635
ID: LCPFHPS_00009
Exp: 11/06/20 Prpd: SBC
PFHpS at 47.6ug/mL



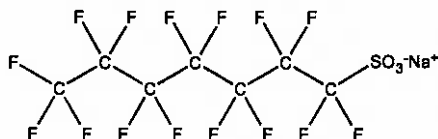
730639
ID: LCPFHPS_00010
Exp: 11/06/20 Prpd: SBC
PFHpS at 47.6ug/mL



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS **LOT NUMBER:** LPFHpS1115
COMPOUND: Sodium perfluoro-1-heptanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₇F₁₅SO₃Na **MOLECULAR WEIGHT:** 472.10
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.6 ± 2.4 µg/ml (PFHpS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/06/2015
EXPIRY DATE: (mm/dd/yyyy) 11/06/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.1% of L-PFHxS (C₆F₁₃SO₃Na) and ~ 0.2% of L-PFOS (C₈F₁₇SO₃Na).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 11/09/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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HOMOGENEITY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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LIMITED WARRANTY:

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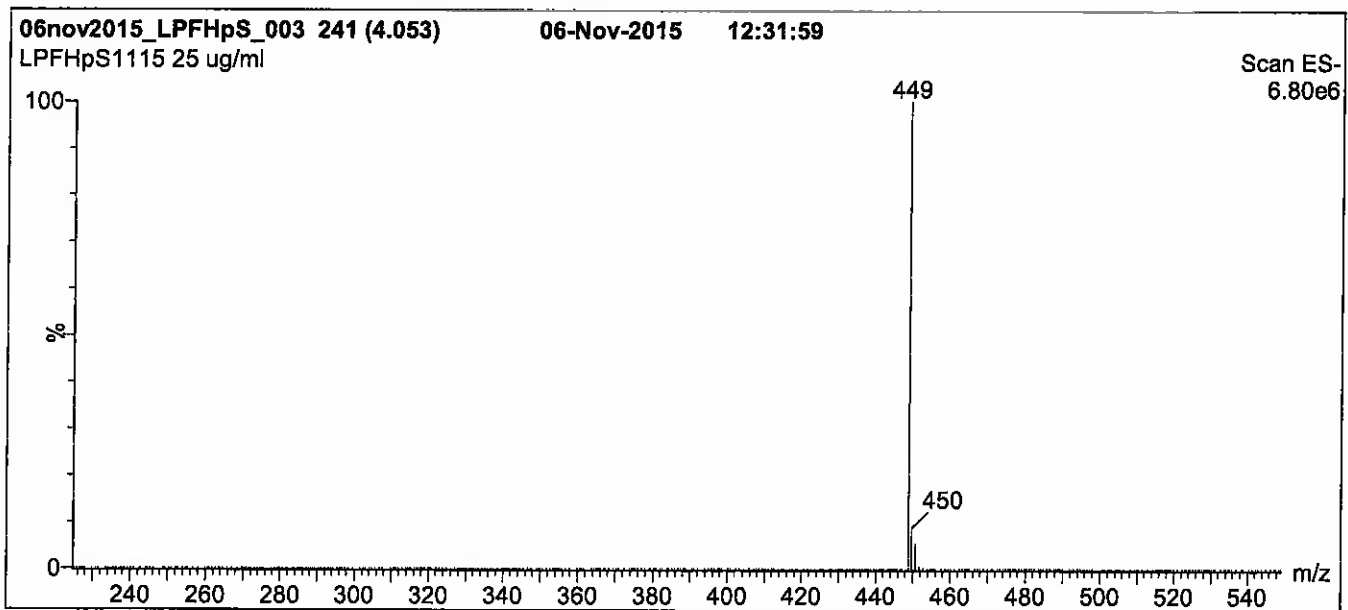
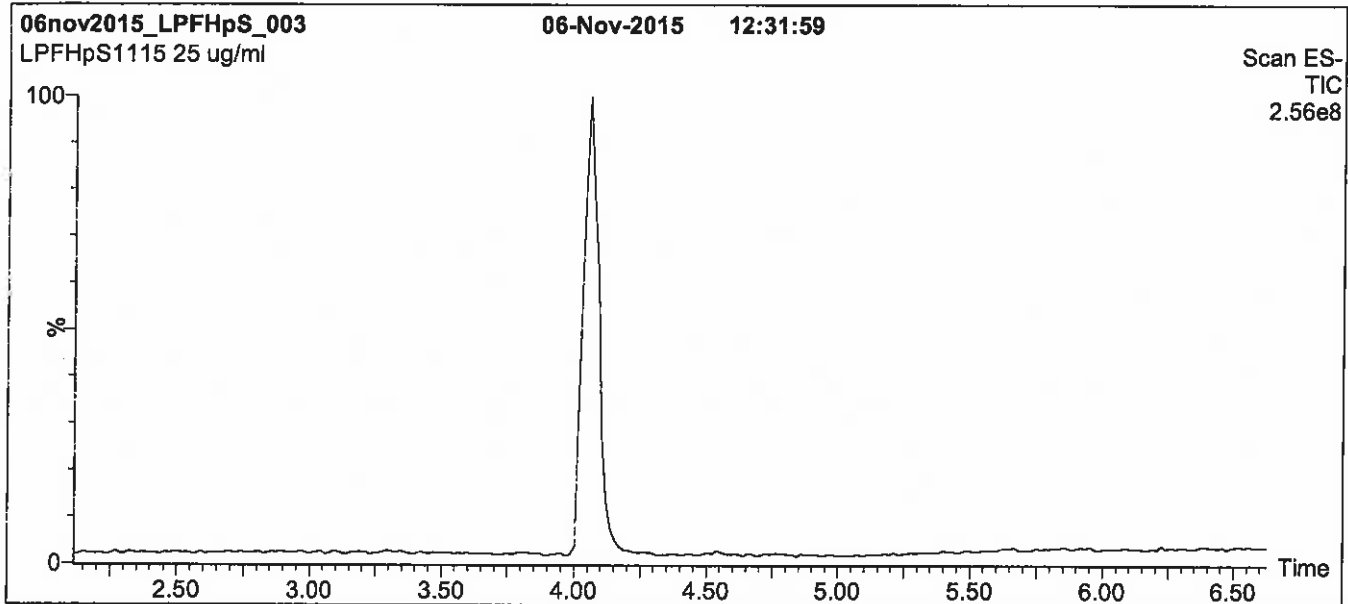
QUALITY MANAGEMENT:

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Figure 1: L-PFHpS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold
 for 2 min before returning to initial conditions in 0.5 min.
 Time: 10 min

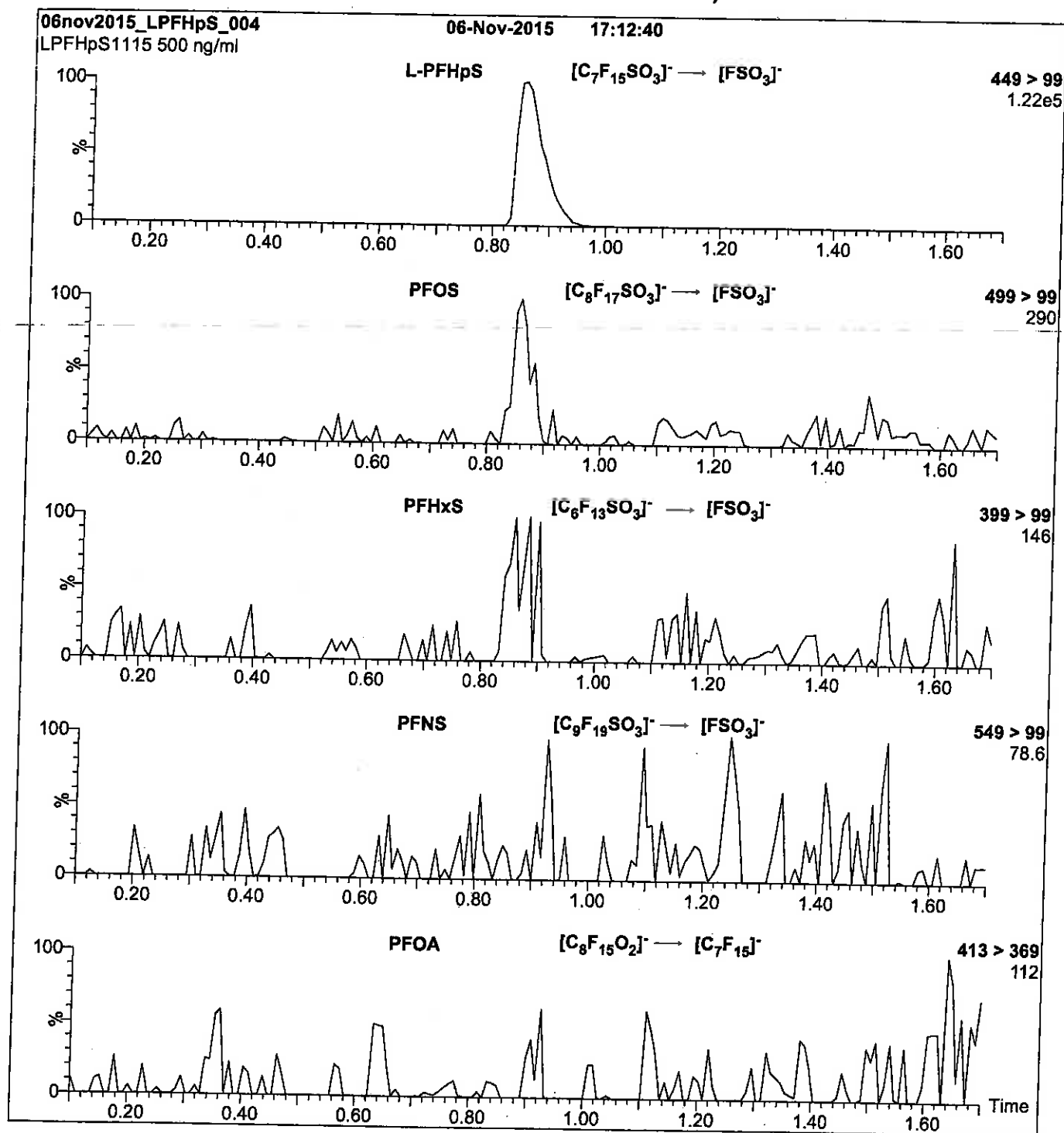
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 60.00
 Cone Gas Flow (l/hr) = 60
 Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFHpS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 35

Reagent

LCPFHxA_00005

R: 832 9/13/16



730551
ID: LCPFHxA_00005
Exp: 12/22/20 Prod: SBC
PF-n-hexanoic acid



730552
ID: LCPFHxA_00006
Exp: 12/22/20 Prod: SBC
PF-n-hexanoic acid



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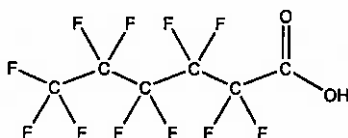
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA1215

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: C₆H₁₁F₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 314.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/22/2015
EXPIRY DATE: (mm/dd/yyyy) 12/22/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/23/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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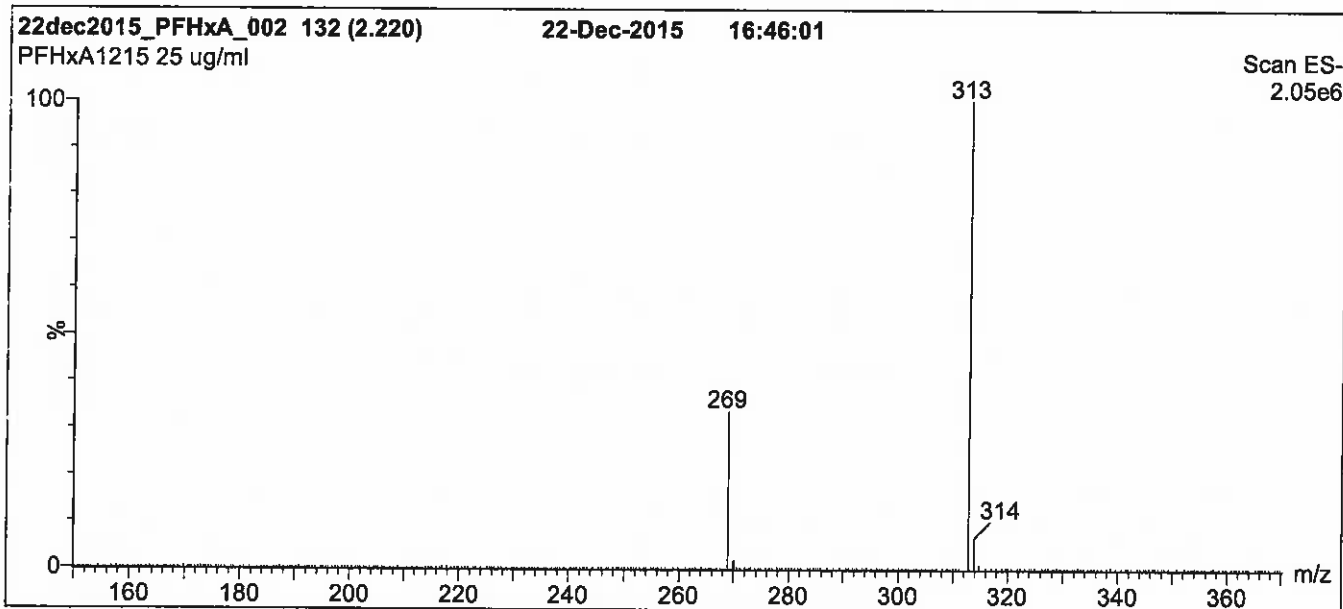
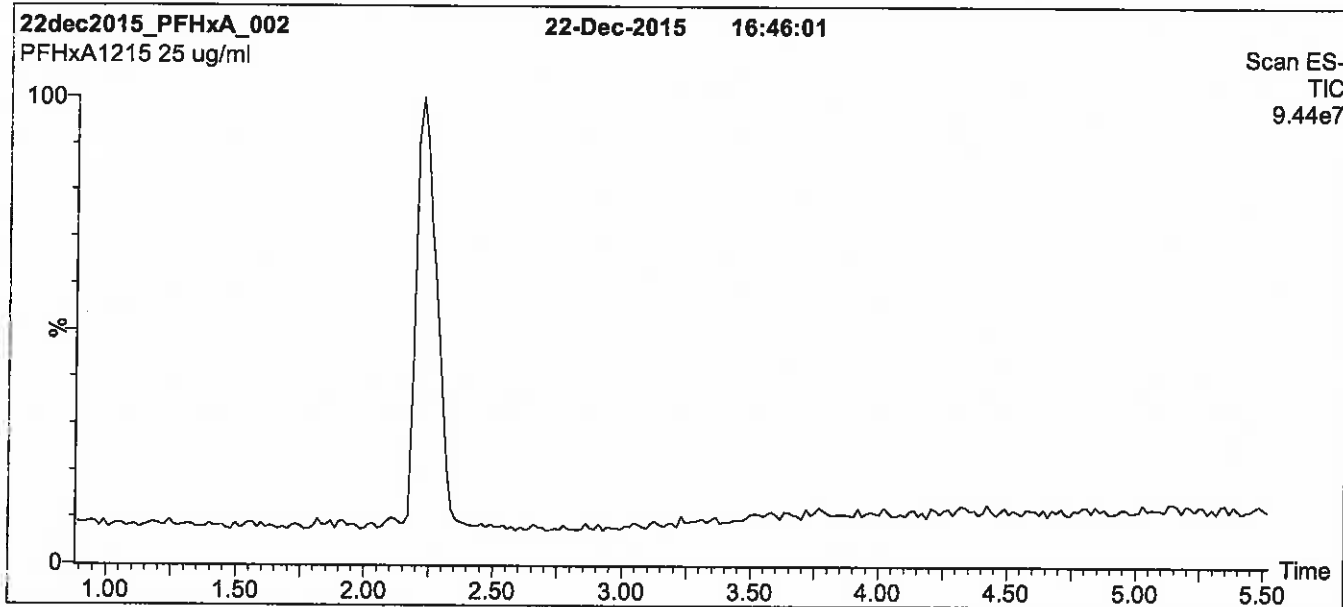
QUALITY MANAGEMENT:

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Figure 1: PFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

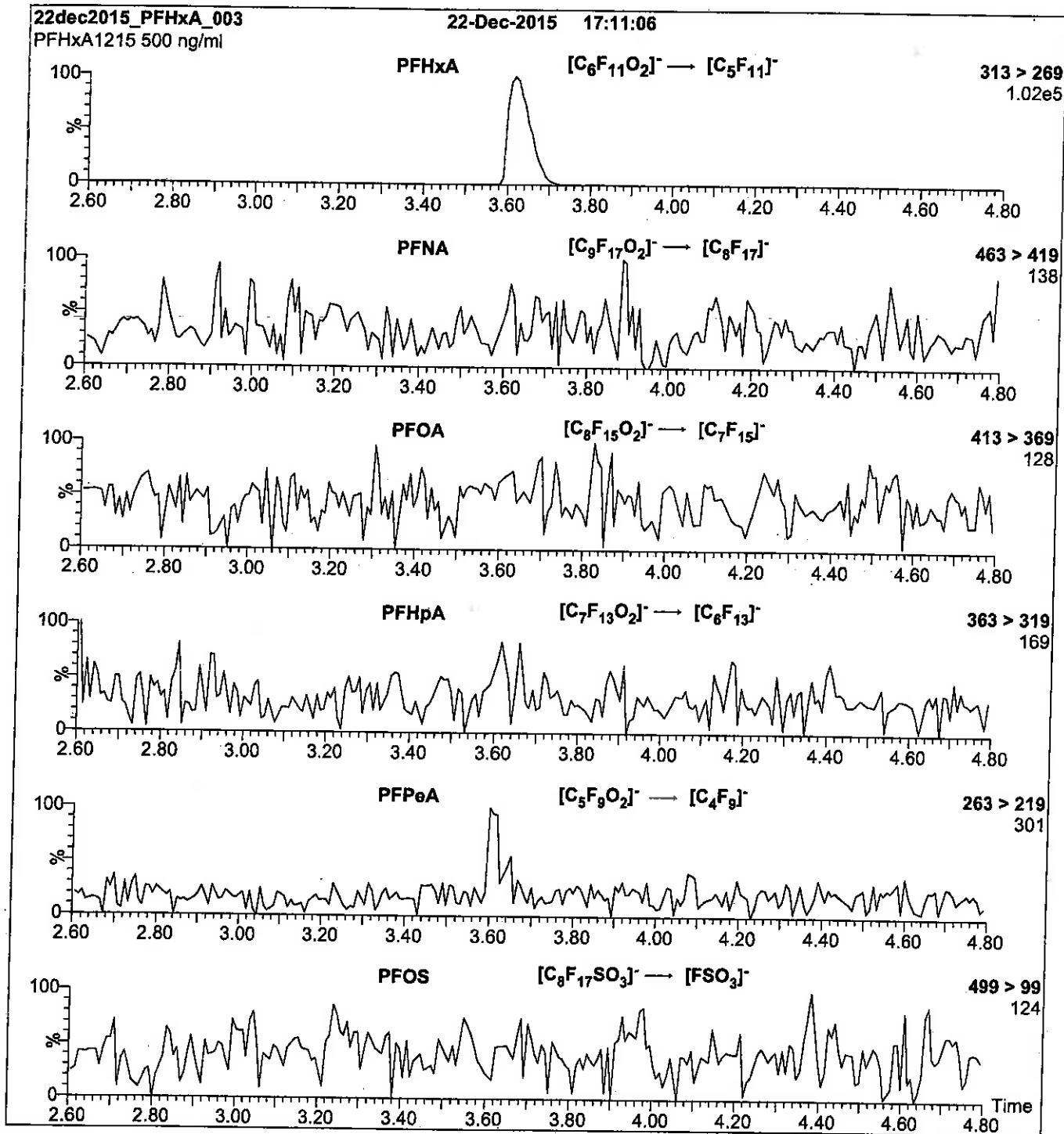
Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
 Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFHxA_00006

R: 832 9/13/16



730551
ID: LCPFHxA_00005
Exp: 12/22/20 Prod: SBC
PF-n-hexanoic acid



730552
ID: LCPFHxA_00006
Exp: 12/22/20 Prod: SBC
PF-n-hexanoic acid



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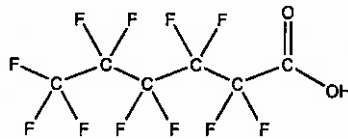
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA1215

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: $C_6HF_{11}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 314.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/22/2015
EXPIRY DATE: (mm/dd/yyyy) 12/22/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/23/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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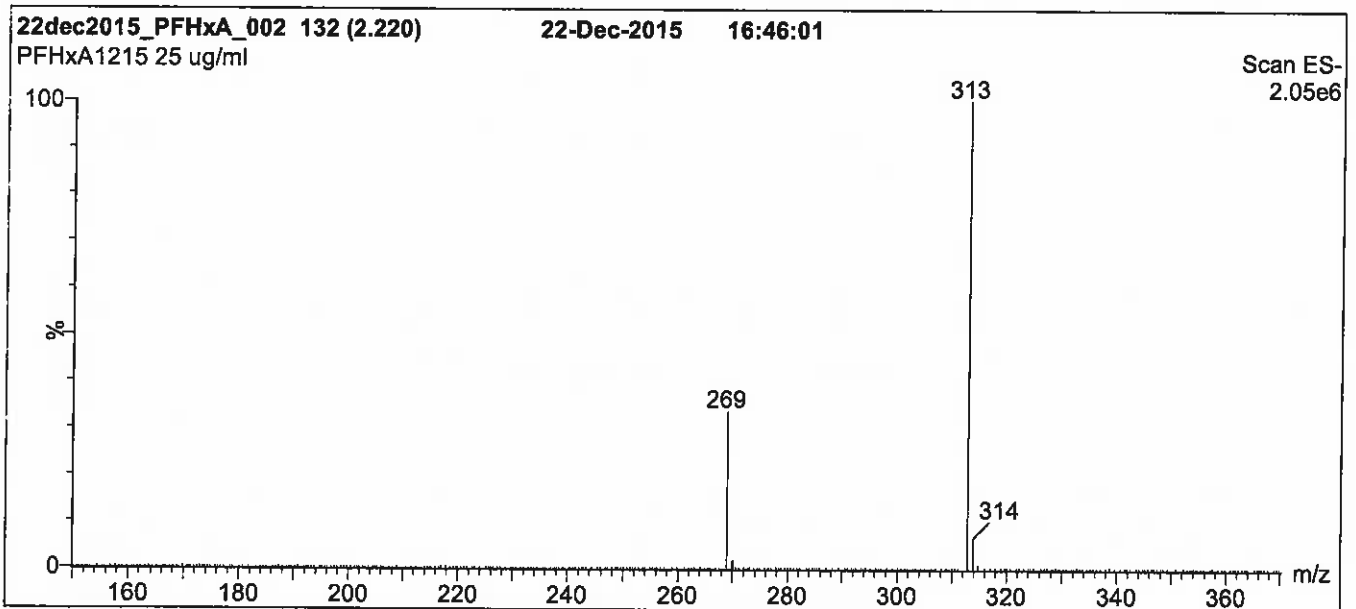
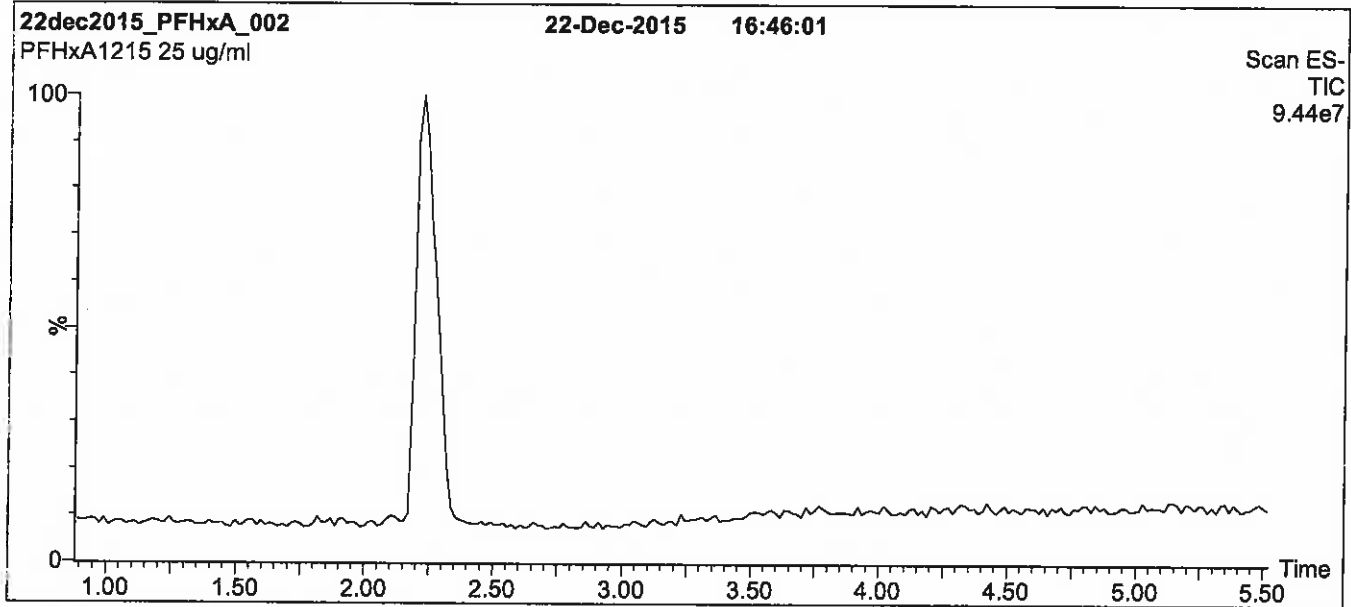
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Figure 1: PFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

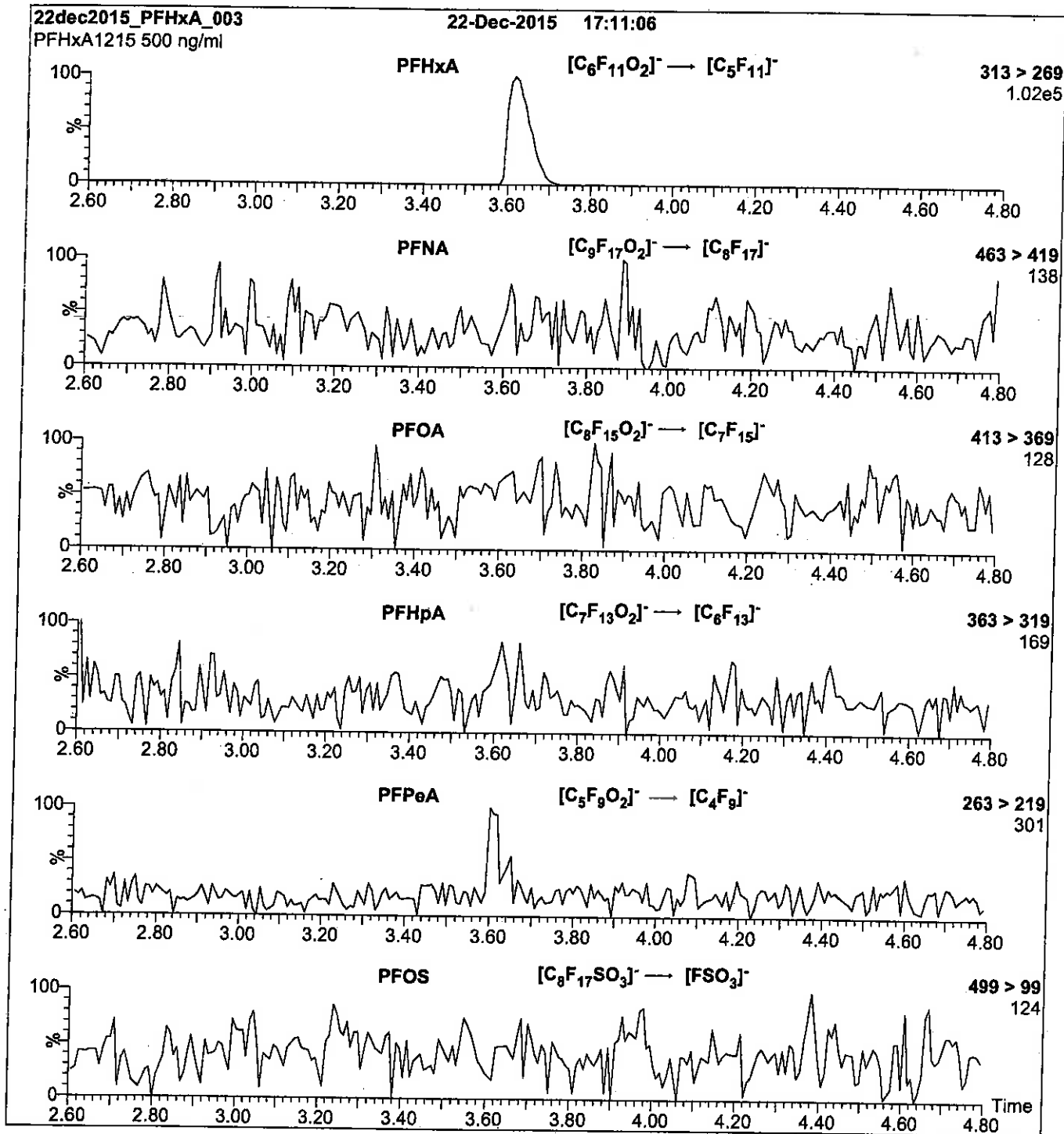
Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
 Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFHxDA_00007

R: SBC 9/13/16

Scanned 10/14/16



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730630
ID: LCPFHxDA_00006
Exp: 05/25/21 Prod: SBC
PFHxDA stock 50ug/mL

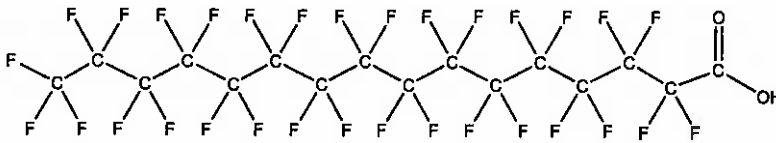


730631
ID: LCPFHxDA_00007
Exp: 05/25/21 Prod: SBC
PFHxDA stock 50ug/mL

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxDA **LOT NUMBER:** PFHxDA0516
COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE: **CAS #:** 67905-19-5



MOLECULAR FORMULA: C₁₆H₃₁O₂ **MOLECULAR WEIGHT:** 814.13
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/25/2016
EXPIRY DATE: (mm/dd/yyyy) 05/25/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.4% of PFODA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 05/27/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

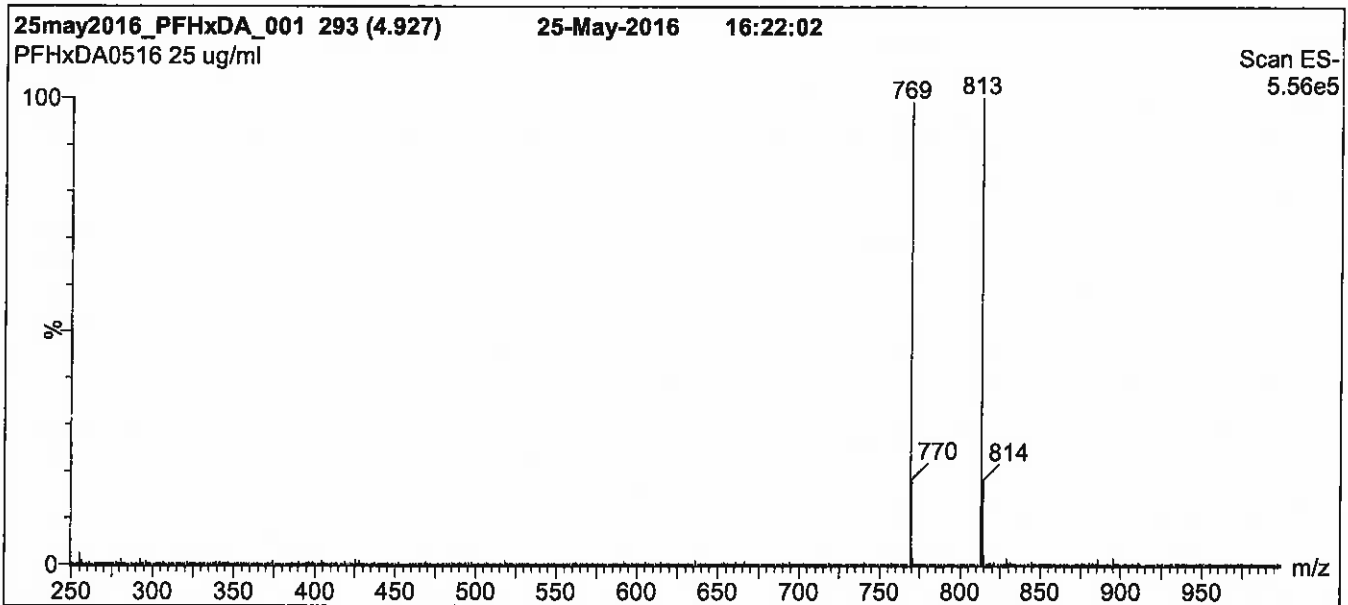
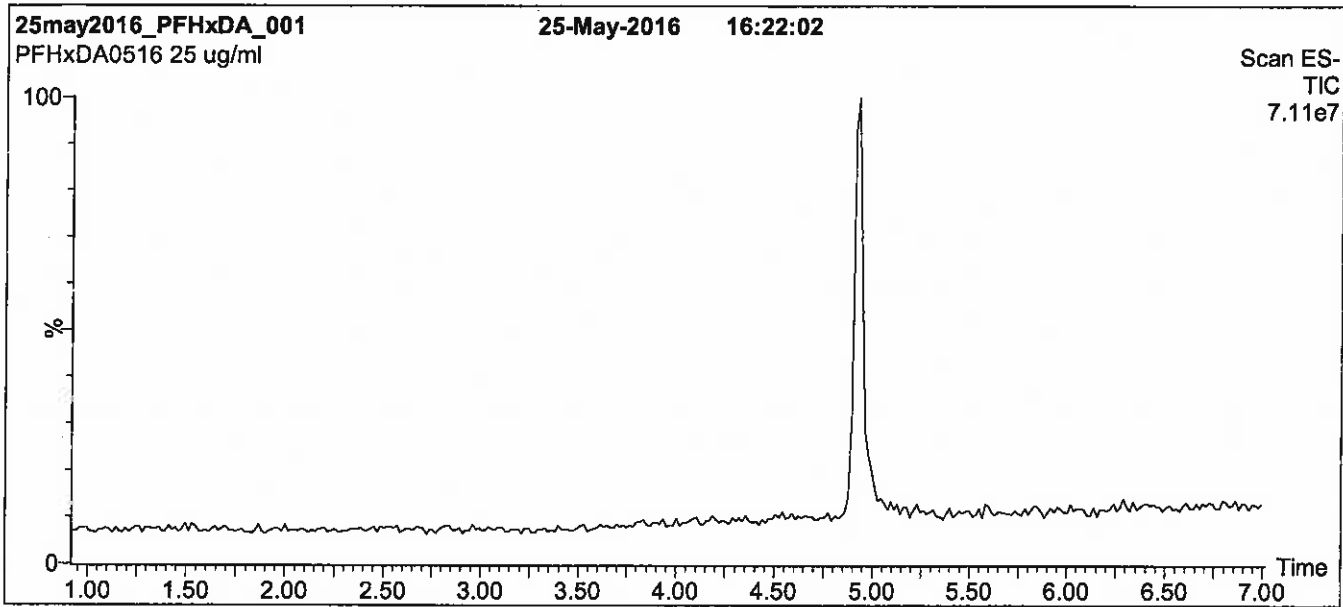
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFHxDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 95% organic over 6 min and hold for 2.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

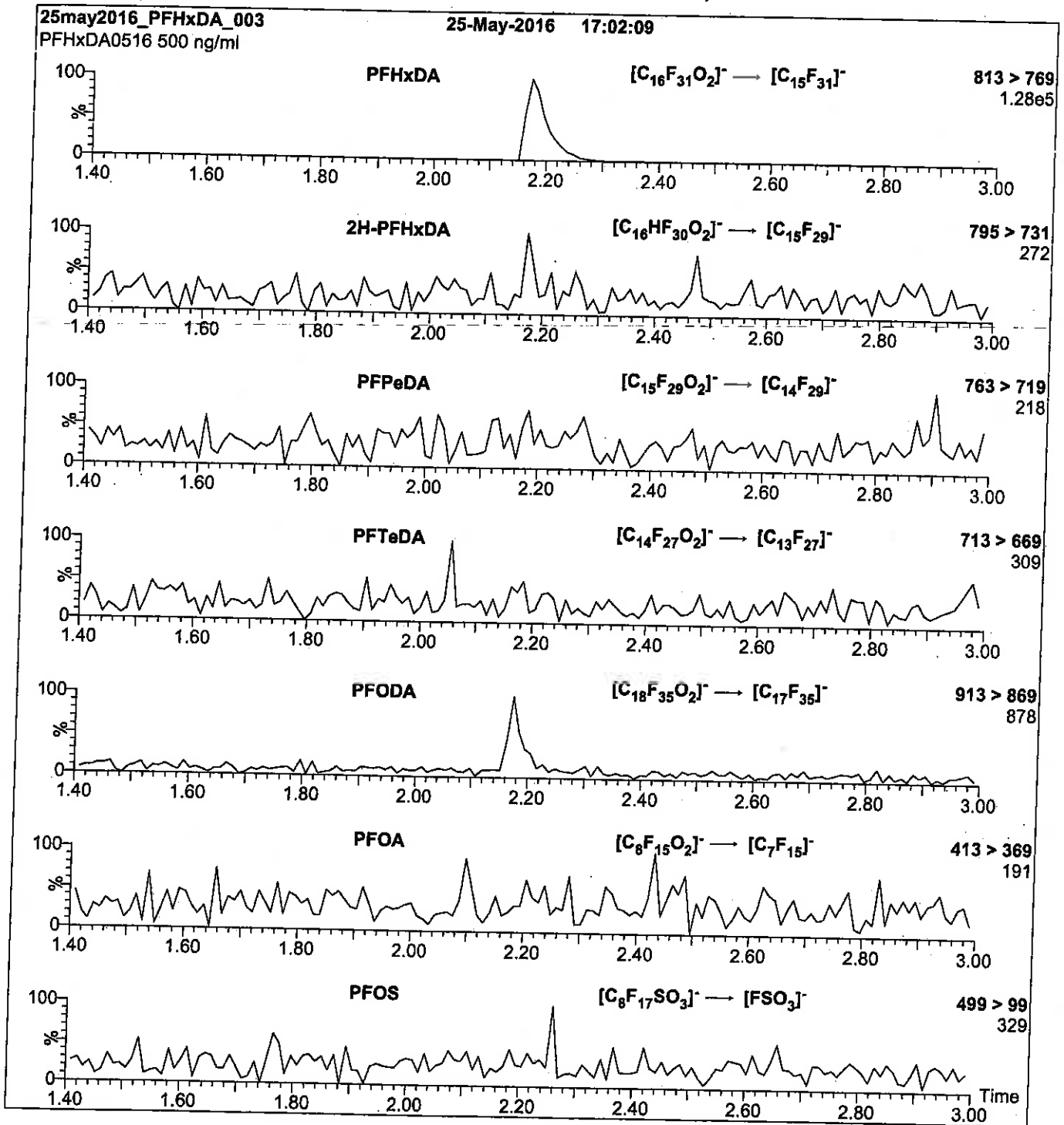
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHxDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
 Collision Energy (eV) = 15

Reagent

LCPFHxS-br_00003

SBC
R: 9/13/16



730513
ID: LCPFHxS-br_00002
Exp: 07/03/20 Ppfd: SBC
Potassium Perfluorohexane



730514
ID: LCPFHxS-br_00003
Exp: 07/03/20 Ppfd: SBC
Potassium Perfluorohexane



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

**Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers**

PRODUCT CODE: br-PFHxSK
LOT NUMBER: brPFHxSK0615
CONCENTRATION: 50.0 ± 2.5 µg/ml (total potassium salt)
45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 06/29/2015
LAST TESTED: (mm/dd/yyyy) 07/03/2015
EXPIRY DATE: (mm/dd/yyyy) 07/03/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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Table A: br-PFHxSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

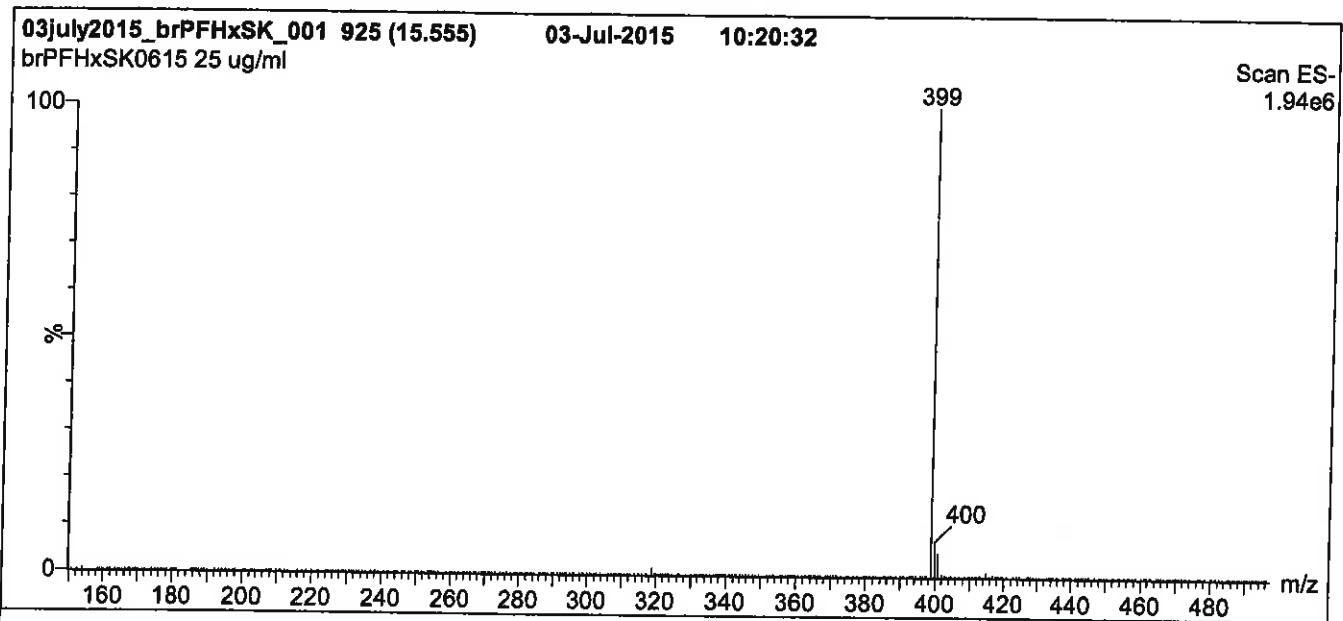
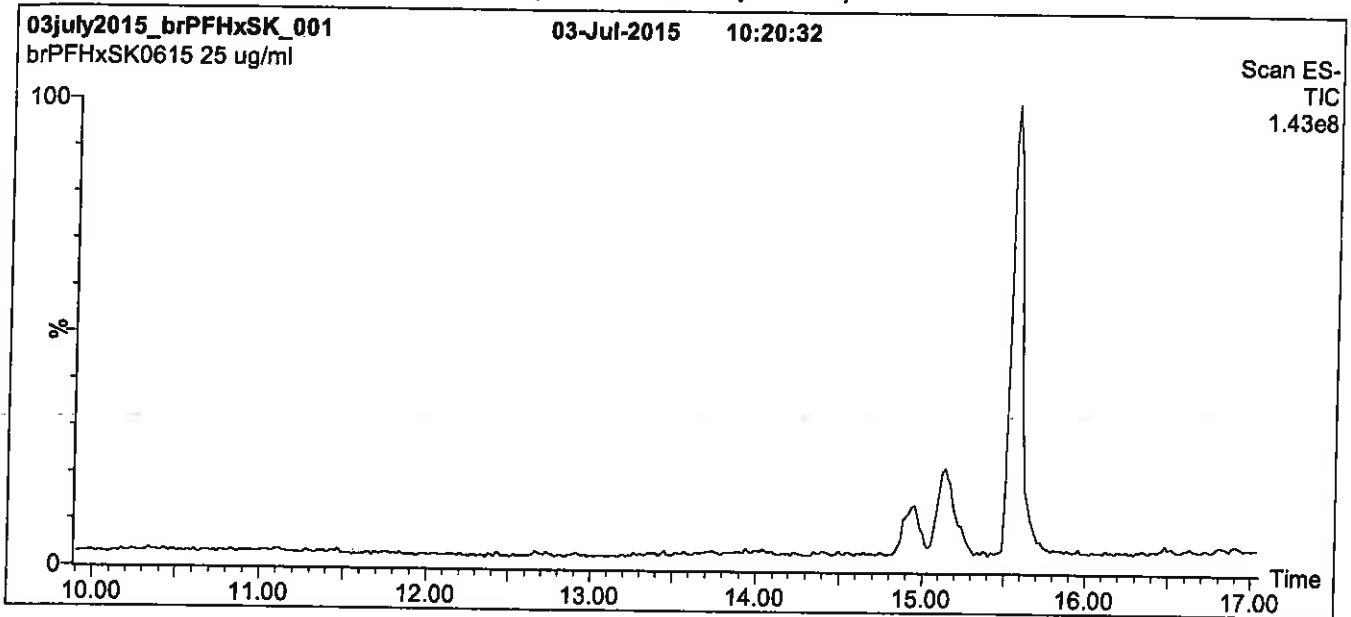
| Isomer | Name | Structure | Percent Composition by ¹⁹ F-NMR |
|--------|---|---|--|
| 1 | Potassium perfluoro-1-hexanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ | 81.1 |
| 2 | Potassium 1-trifluoromethylperfluoropentanesulfonate** | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 2.9 |
| 3 | Potassium 2-trifluoromethylperfluoropentanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 1.4 |
| 4 | Potassium 3-trifluoromethylperfluoropentanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 5.0 |
| 5 | Potassium 4-trifluoromethylperfluoropentanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 8.9 |
| 6 | Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate | $\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3\text{CCF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 0.2 |
| 7 | Other Unidentified Isomers | | 0.5 |

* Percent of total perfluorohexanesulfonate isomers only.
 ** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 07/15/2015
(mm/dd/yyyy)

Figure 1: br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

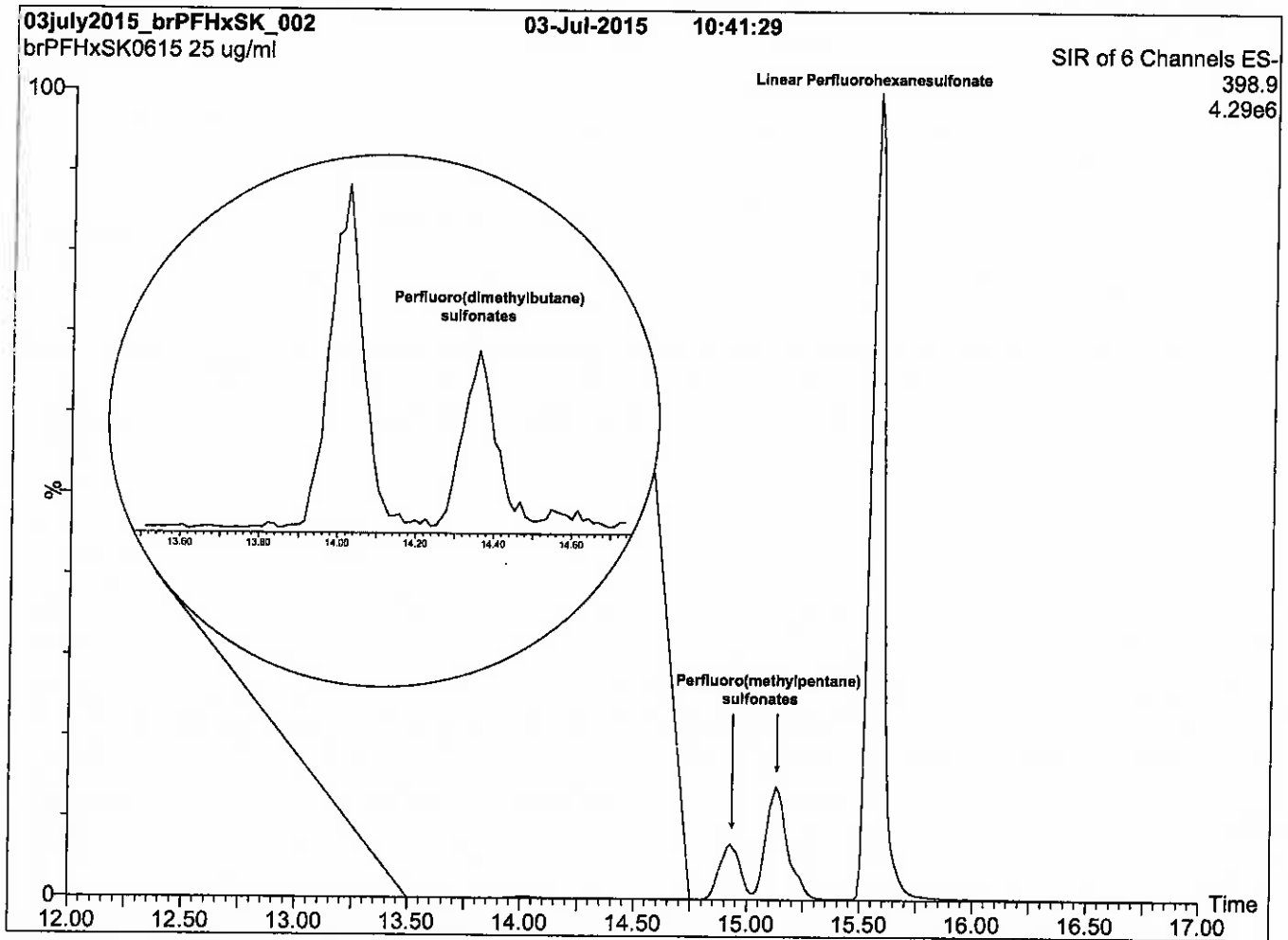
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Flow: 300 μ l/min

Figure 2: br-PFHxSK; LC/MS Data



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

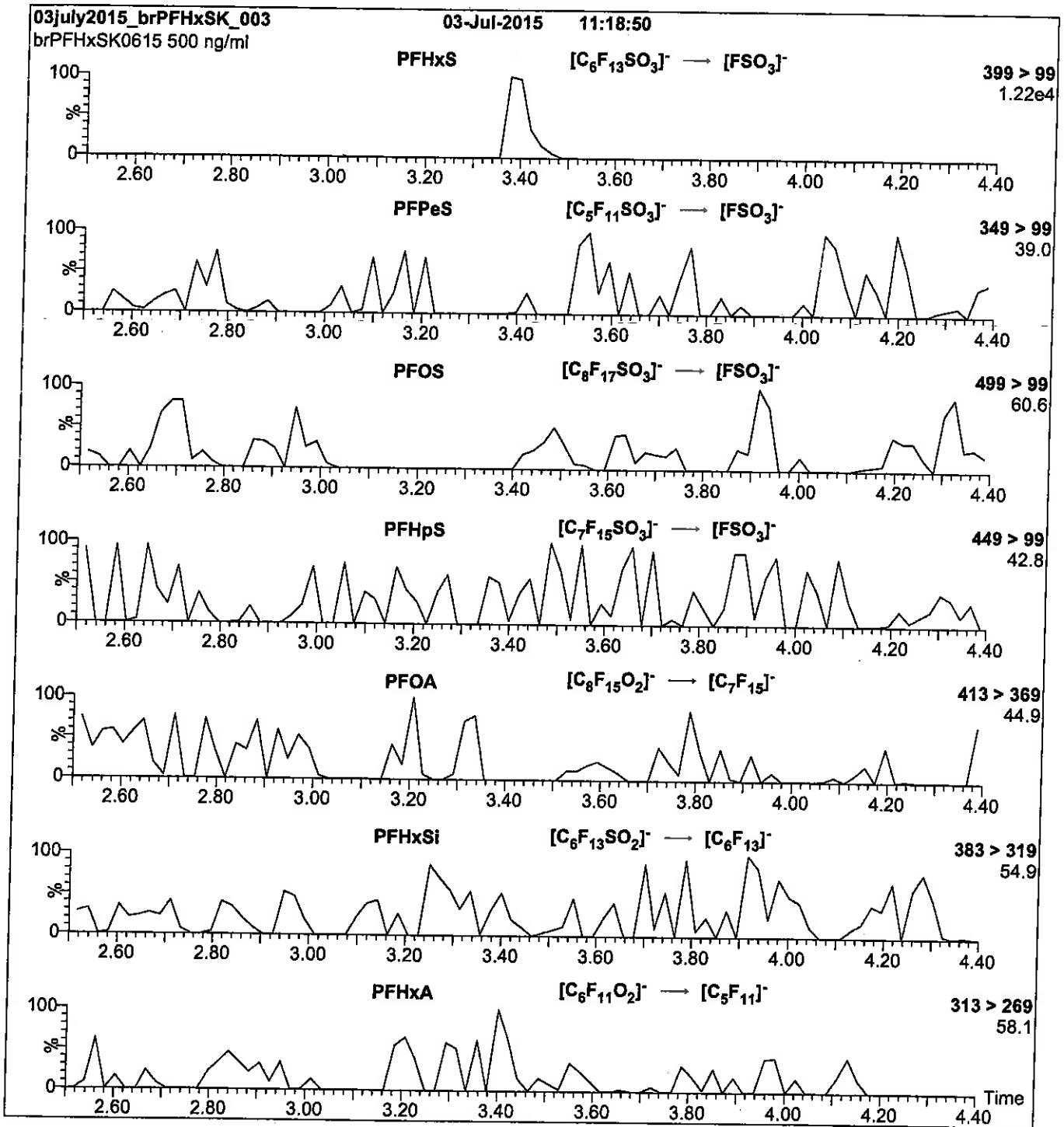
Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

Flow: 300 μ l/min

MS Parameters

Experiment: SIR (6 channels)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 3: br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: Direct loop injection
10 μ l (500 ng/ml br-PFHxSK)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCPFNA_00007

R: SBC 9/13/16
Scanned 10/14/16



730559
ID: LCPFNA_00006
Exp: 10/23/20 Ppfd: SBC
PF-n-nonanoic acid



730560
ID: LCPFNA_00007
Exp: 10/23/20 Ppfd: SBC
PF-n-nonanoic acid



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFNA

LOT NUMBER:

PFNA1015

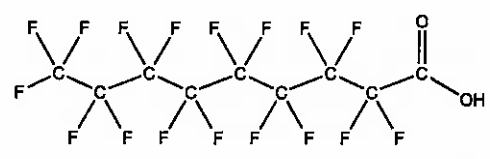
COMPOUND:

Perfluoro-n-nonanoic acid

STRUCTURE:

CAS #:

375-95-1



MOLECULAR FORMULA:

C₉H_F₁₇O₂

MOLECULAR WEIGHT:

464.08

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/23/2015

EXPIRY DATE: (mm/dd/yyyy)

10/23/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA) and < 0.1% of perfluoro-n-heptanoic acid (PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 10/30/2015
(mm/dd/yyyy)

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where x is expressed as a relative standard uncertainty of the individual parameter.

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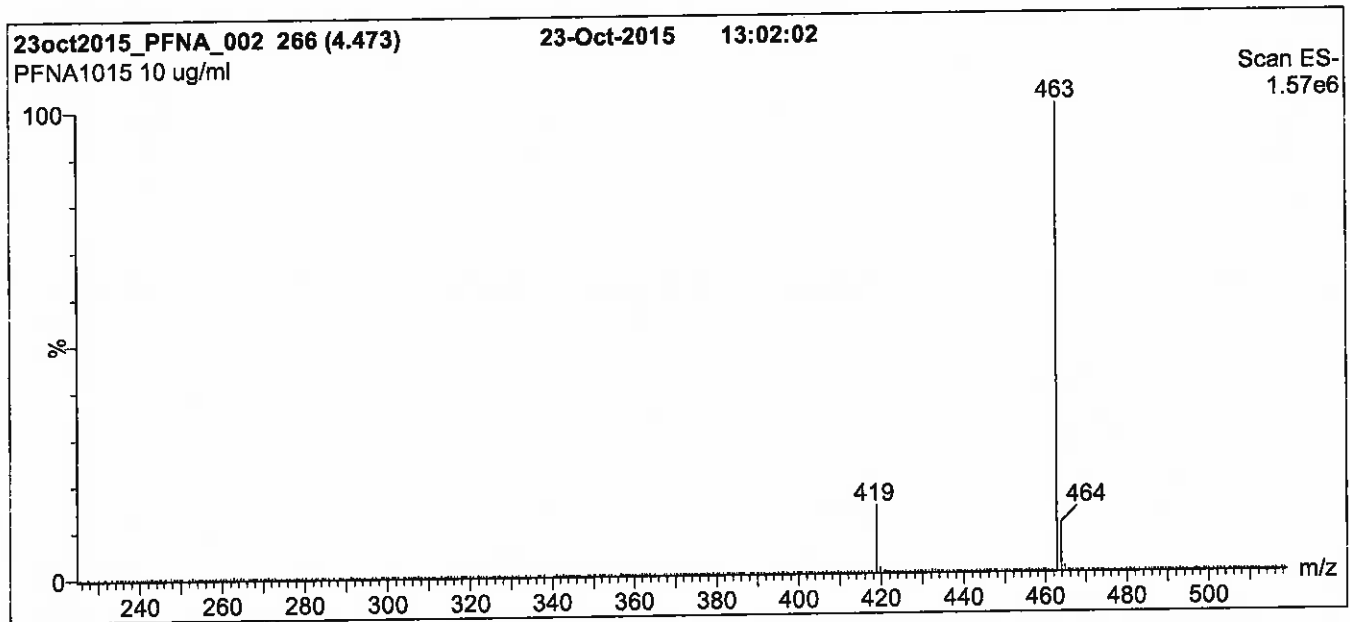
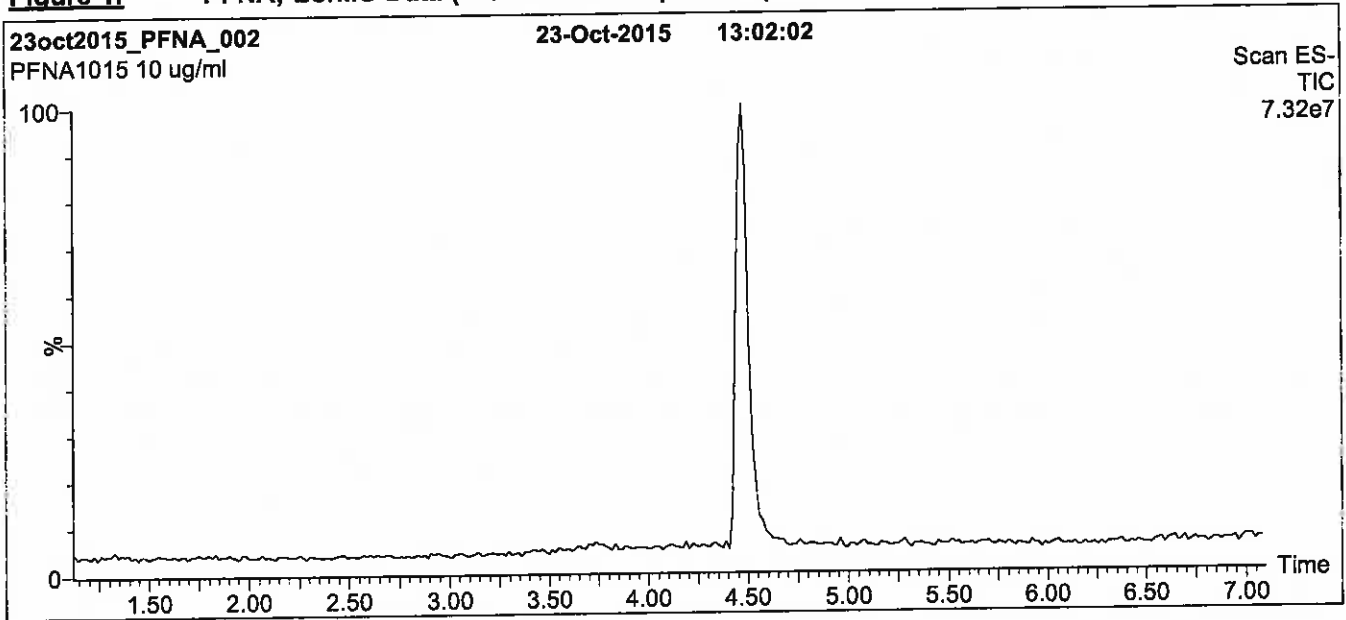
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Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

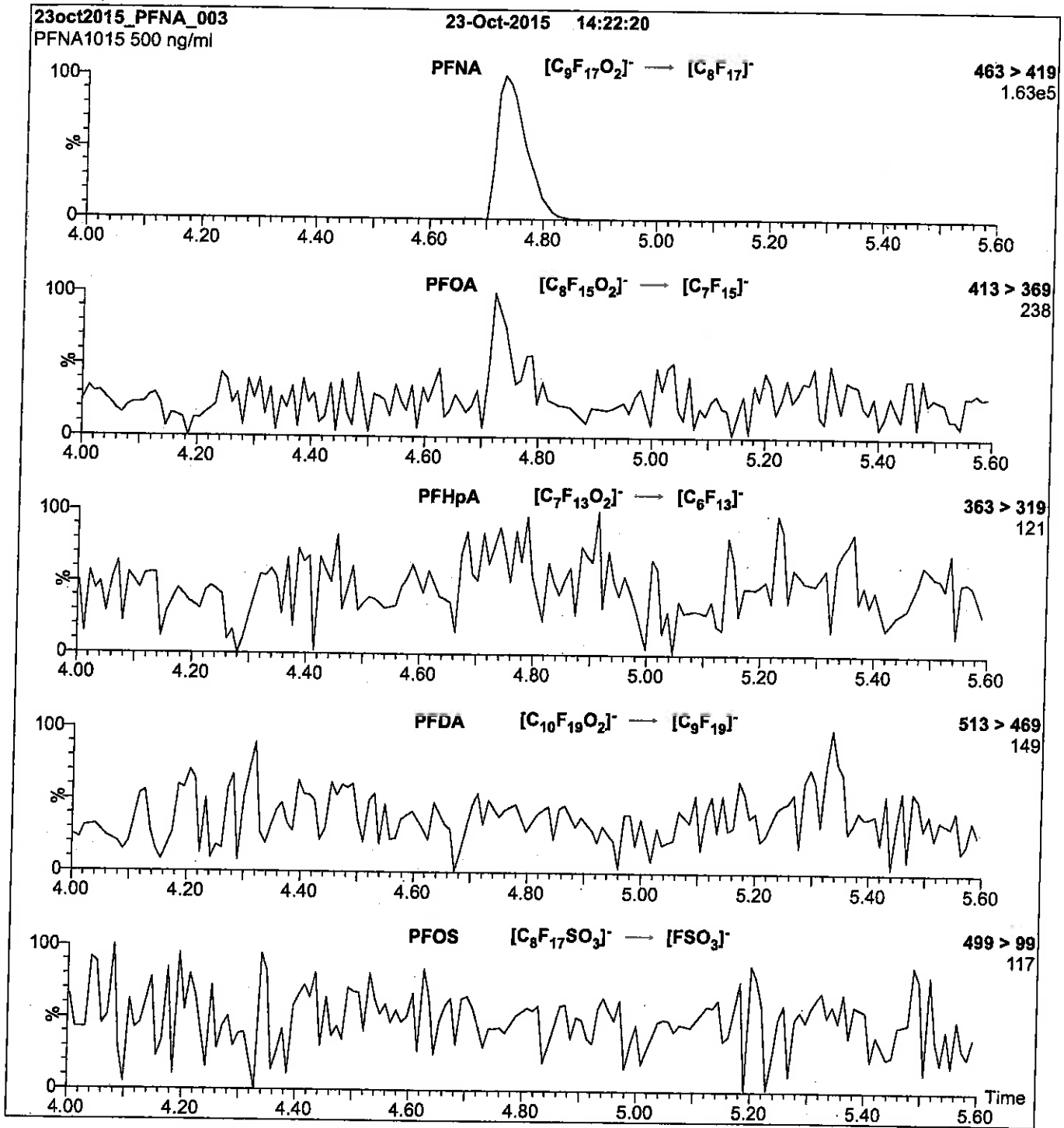
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml PFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
 Collision Energy (eV) = 11

Reagent

LCPFOA_00007

n: 12/24/16 Spd



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFOA

LOT NUMBER:

PFOA0716

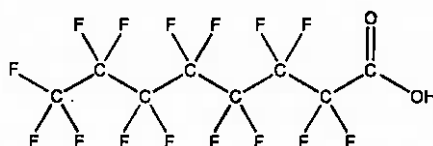
COMPOUND:

Perfluoro-n-octanoic acid

STRUCTURE:

CAS #:

335-67-1



MOLECULAR FORMULA:

$C_8HF_{16}O_2$

MOLECULAR WEIGHT:

414.07

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/02/2016

EXPIRY DATE: (mm/dd/yyyy)

08/02/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:

B.G. Chittim

Date: 08/05/2016

(mm/dd/yyyy)

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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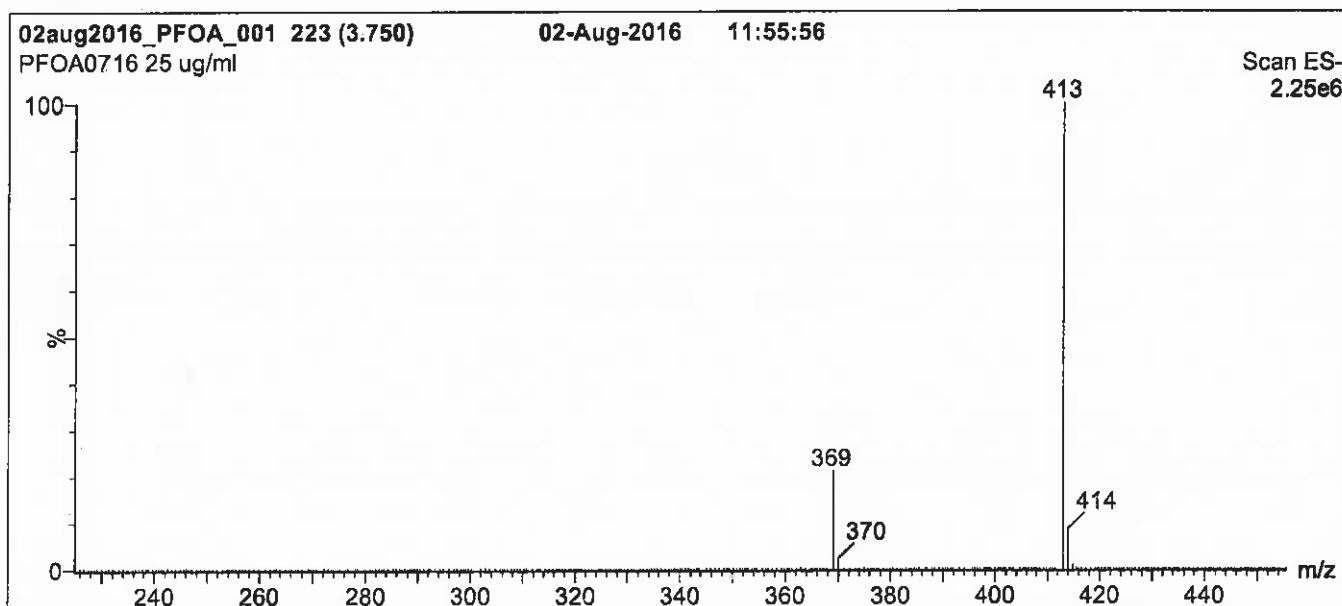
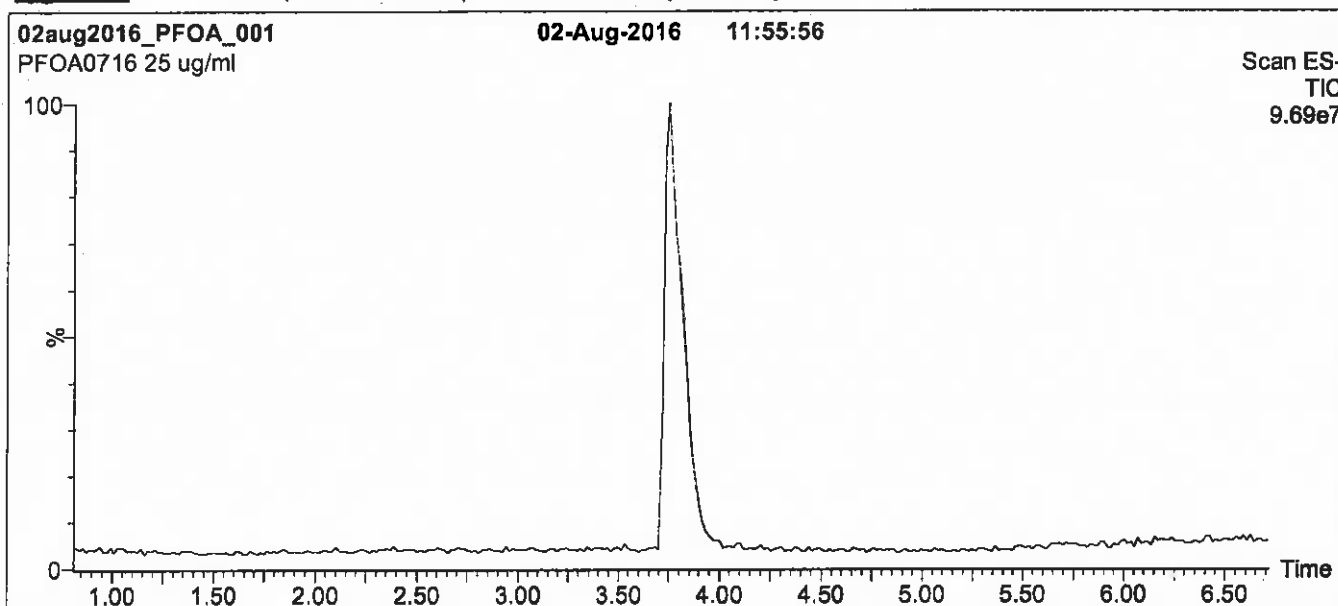
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min

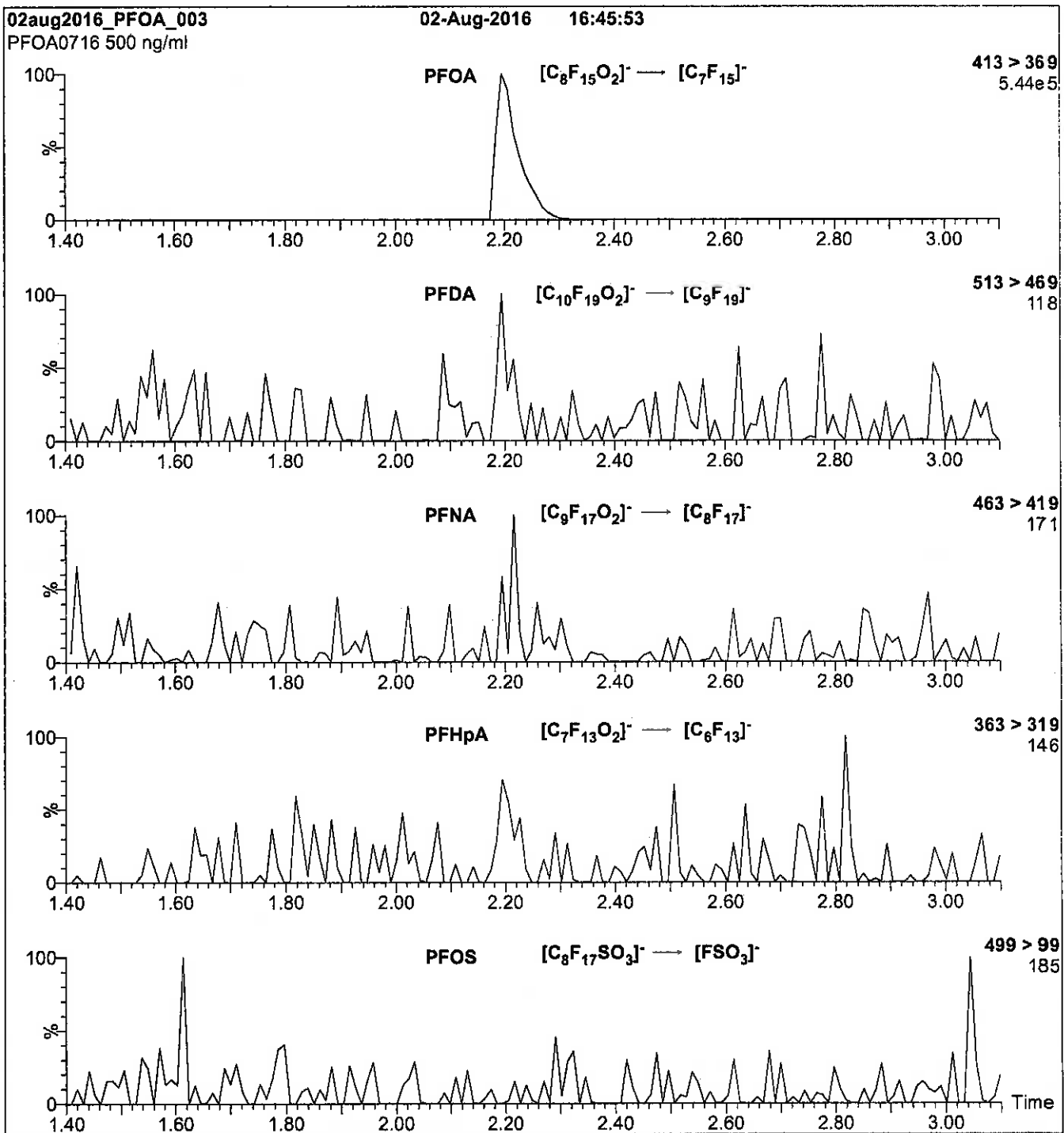
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

Figure 2: PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFODA_00007

Scanned
07/14/16

R: SBC
9/13/16

730632
ID: LCPFOA_00006
Exp: 04/29/21 Prep: SBC
PFODA stock 50ug/mL

730633
ID: LCPFOA_00007
Exp: 04/29/21 Prep: SBC
PFODA stock 50ug/mL

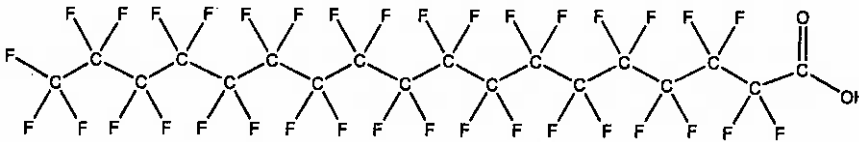


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA **LOT NUMBER:** PFODA0416
COMPOUND: Perfluoro-n-octadecanoic acid

STRUCTURE: **CAS #:** 16517-11-6



MOLECULAR FORMULA: C₁₈H_{F₃₆}O₂ **MOLECULAR WEIGHT:** 914.14
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/29/2016
EXPIRY DATE: (mm/dd/yyyy) 04/29/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

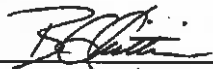
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 05/20/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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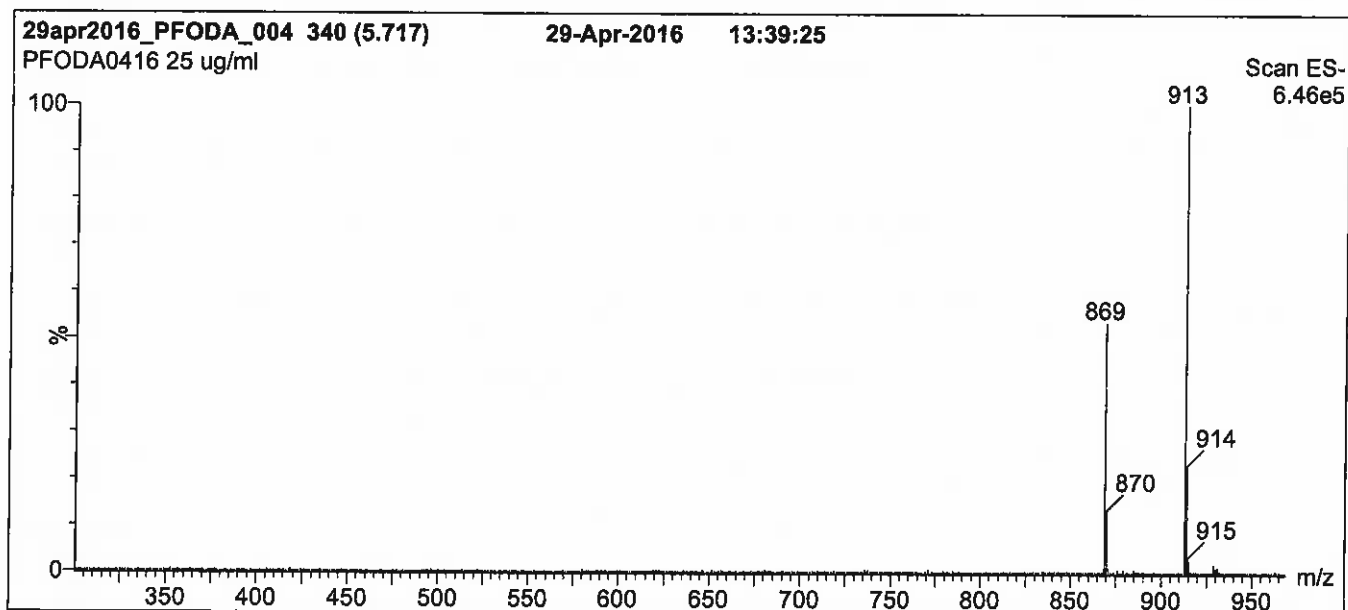
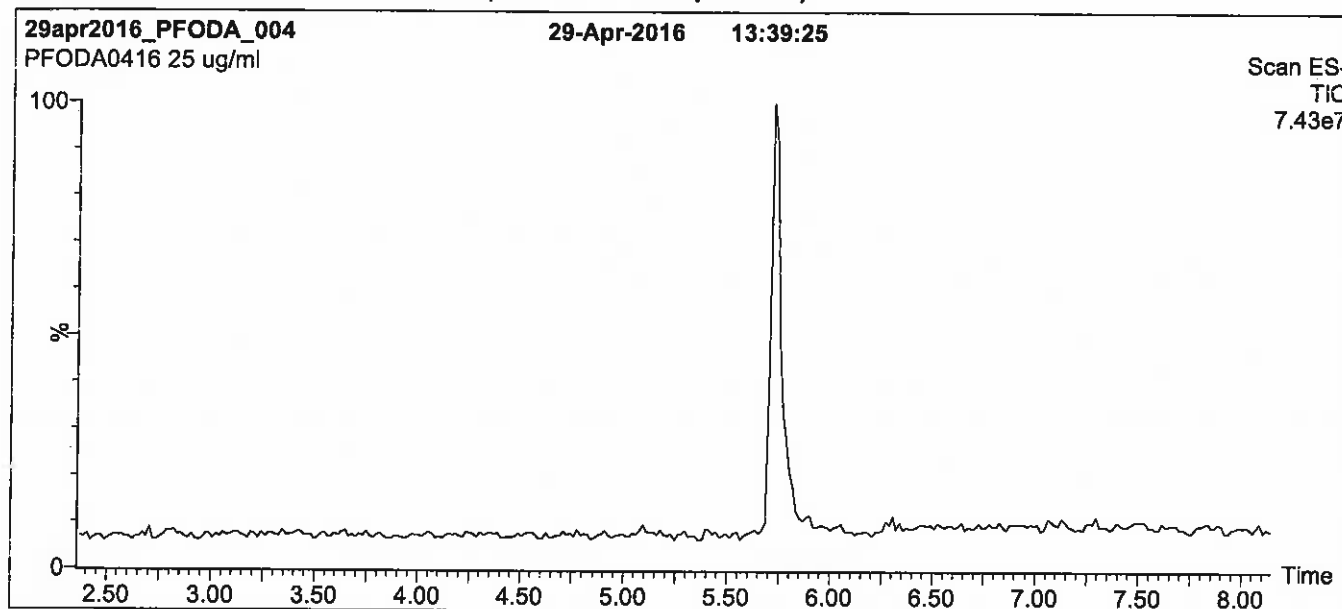
QUALITY MANAGEMENT:

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Figure 1: PFODA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 95% organic over 6 min and hold for
2.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

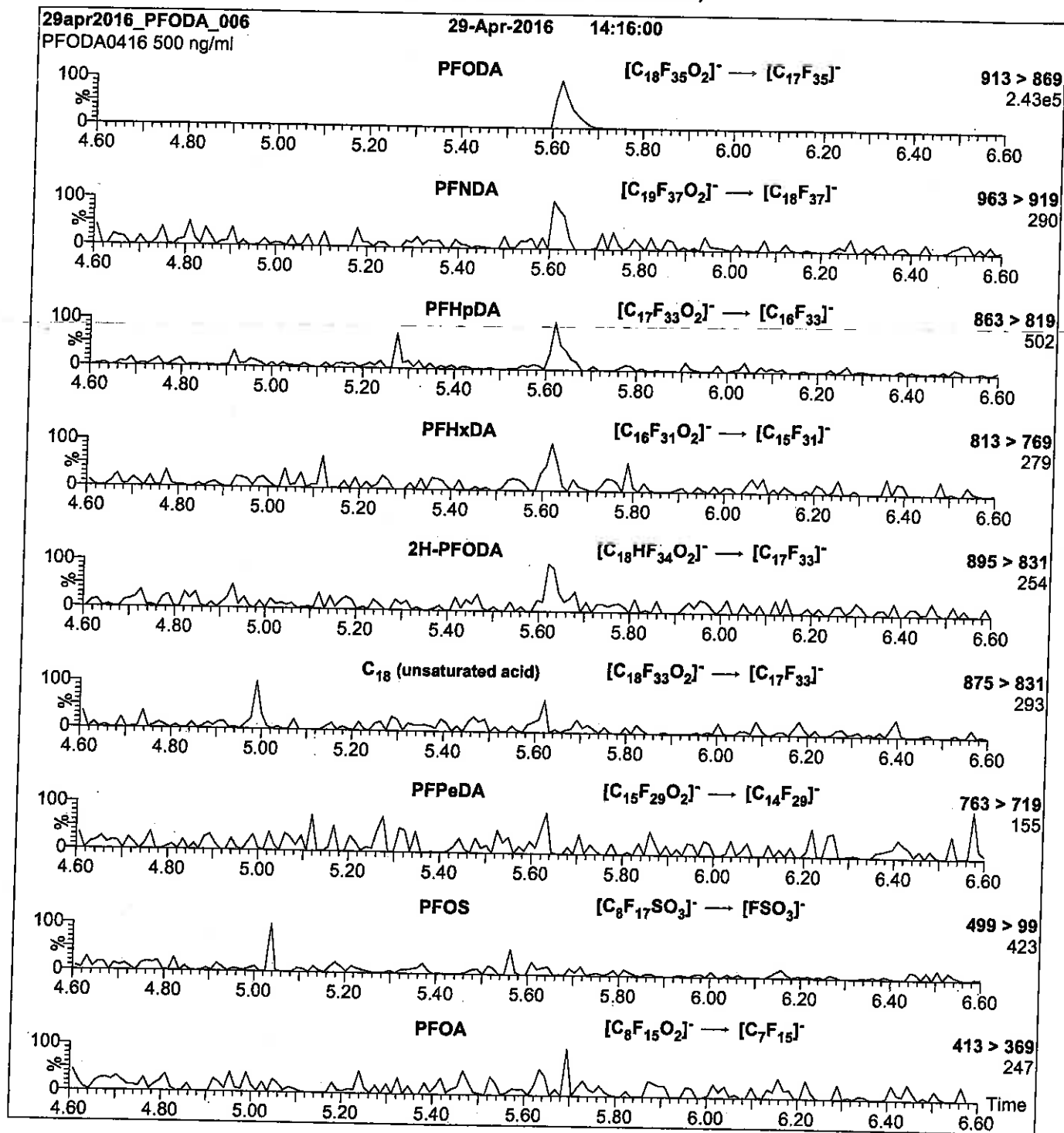
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFODA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFODA)

Mobile phase: Isocratic 90% (80:20 MeOH:ACN) / 10% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCPFOS-br_00003

Scanned
10/14/16 SR

R: SBC 9/13/16



730515
ID: LCPFOS-br_00002
Exp: 10/14/20 Prpt: SBC
Potassium Perfluorooctane



730516
ID: LCPFOS-br_00003
Exp: 10/14/20 Prpt: SBC
Potassium Perfluorooctane



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

**Potassium Perfluorooctanesulfonate
Solution/Mixture of Linear and
Branched Isomers**

PRODUCT CODE: br-PFOSK
LOT NUMBER: brPFOSK1015
CONCENTRATION: 50 ± 2.5 µg/ml (total potassium salt)
46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 10/13/2015
LAST TESTED: (mm/dd/yyyy) 10/14/2015
EXPIRY DATE: (mm/dd/yyyy) 10/14/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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Table A: br-PFOSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

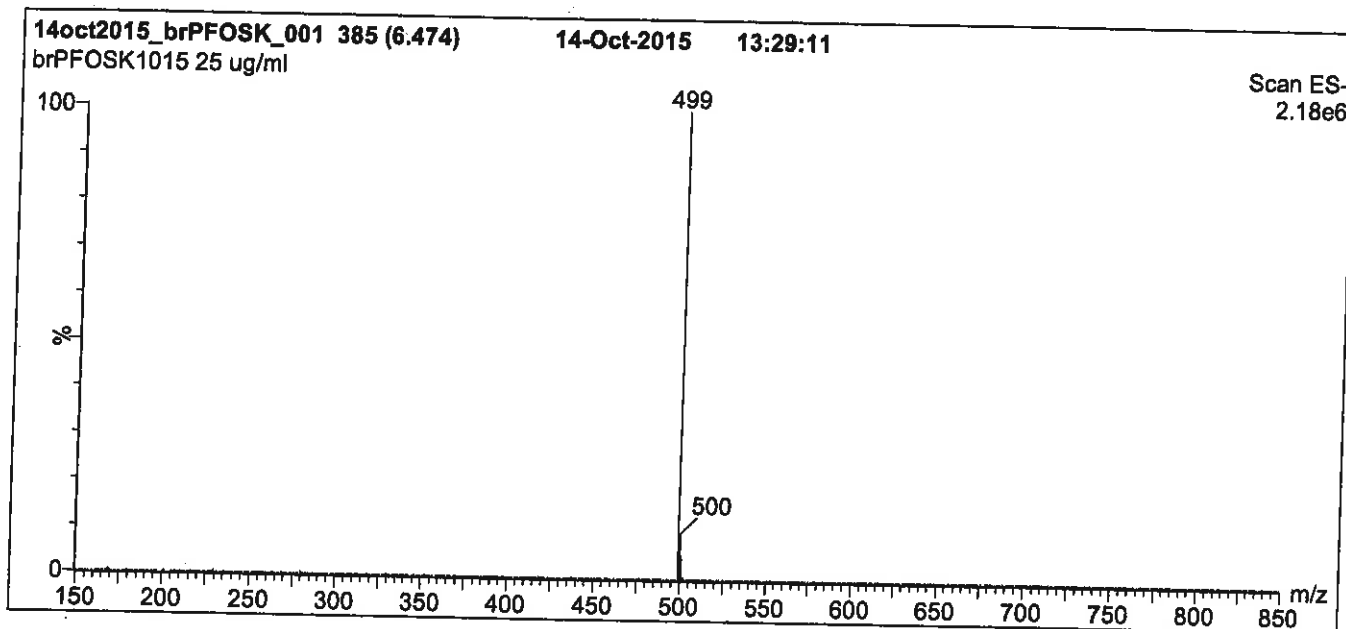
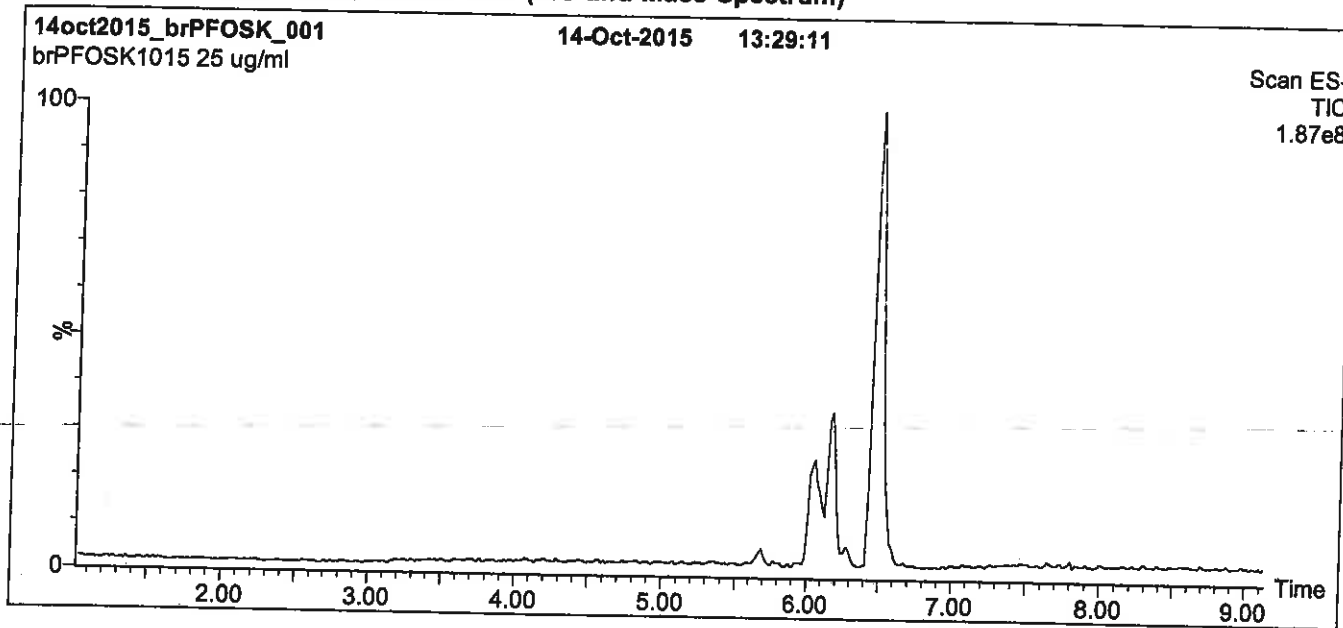
| Isomer | Name | Structure | Percent Composition by ¹⁹ F-NMR |
|--------|---|--|--|
| 1 | Potassium perfluoro-1-octanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ K ⁺ | 78.8 |
| 2 | Potassium 1-trifluoromethylperfluoroheptanesulfonate** | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{SO}_3\text{K}^+) \\ \\ \text{CF}_3 \end{array}$ | 1.2 |
| 3 | Potassium 2-trifluoromethylperfluoroheptanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 0.6 |
| 4 | Potassium 3-trifluoromethylperfluoroheptanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 1.9 |
| 5 | Potassium 4-trifluoromethylperfluoroheptanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 2.2 |
| 6 | Potassium 5-trifluoromethylperfluoroheptanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 4.5 |
| 7 | Potassium 6-trifluoromethylperfluoroheptanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 10.0 |
| 8 | Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate | $\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3-\text{C}-\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 0.2 |
| 9 | Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate | $\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3\text{CF}_2-\text{C}-\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 0.03 |
| 10 | Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate | $\begin{array}{c} \text{CF}_3-\text{CF}(\text{CF}_3)-\text{CF}(\text{CF}_3)-\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \end{array}$ | 0.4 |
| 11 | Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate | $\begin{array}{c} \text{CF}_3-\text{CF}(\text{CF}_3)-\text{CF}_2-\text{CF}(\text{CF}_3)-\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \end{array}$ | 0.07 |

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labeled in Figure 2.
 ** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 10/15/2015
(mm/dd/yyyy)

Figure 1: br-PFOSK; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

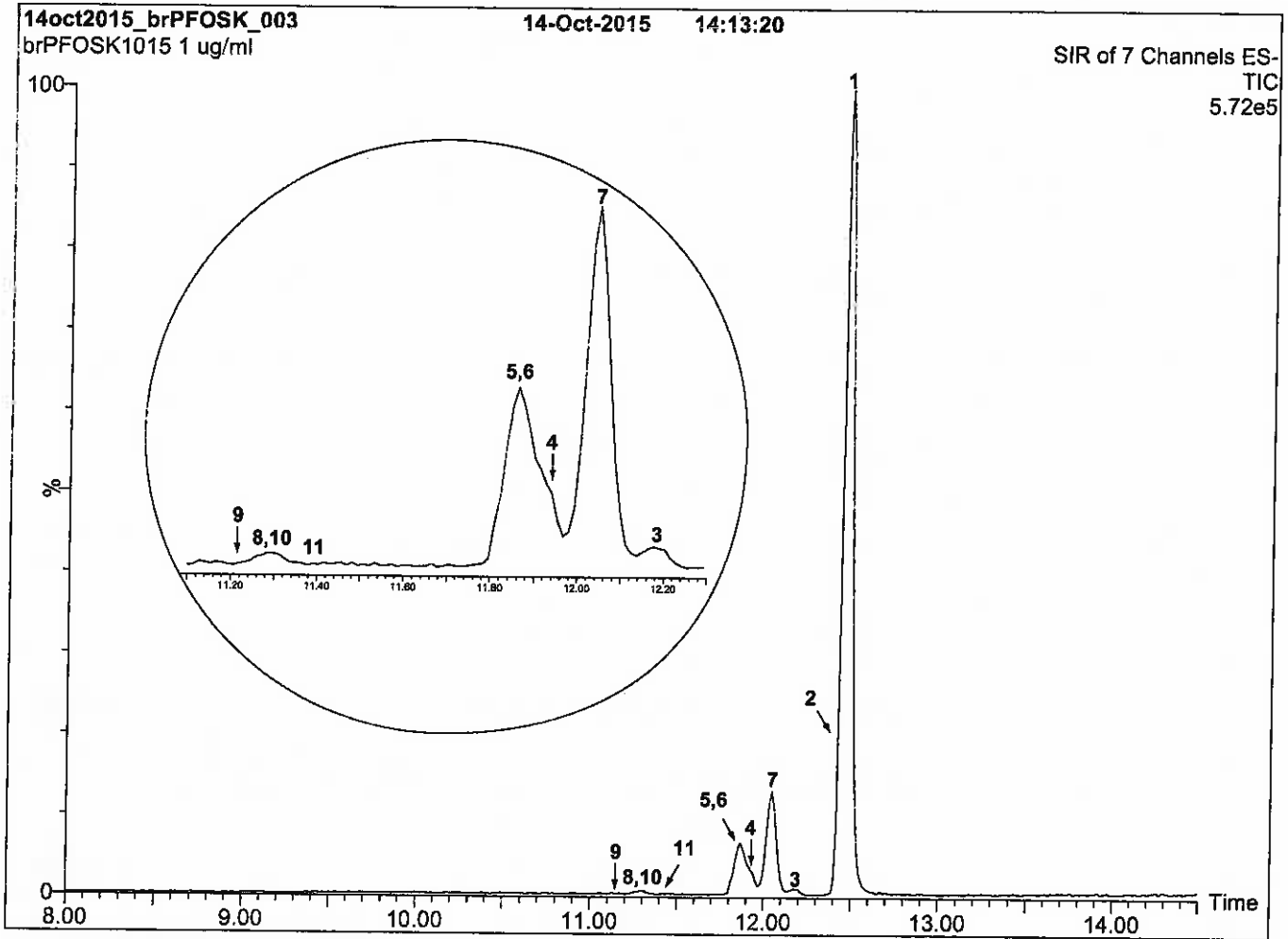
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: br-PFOSK; LC/MS Data (SIR)



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

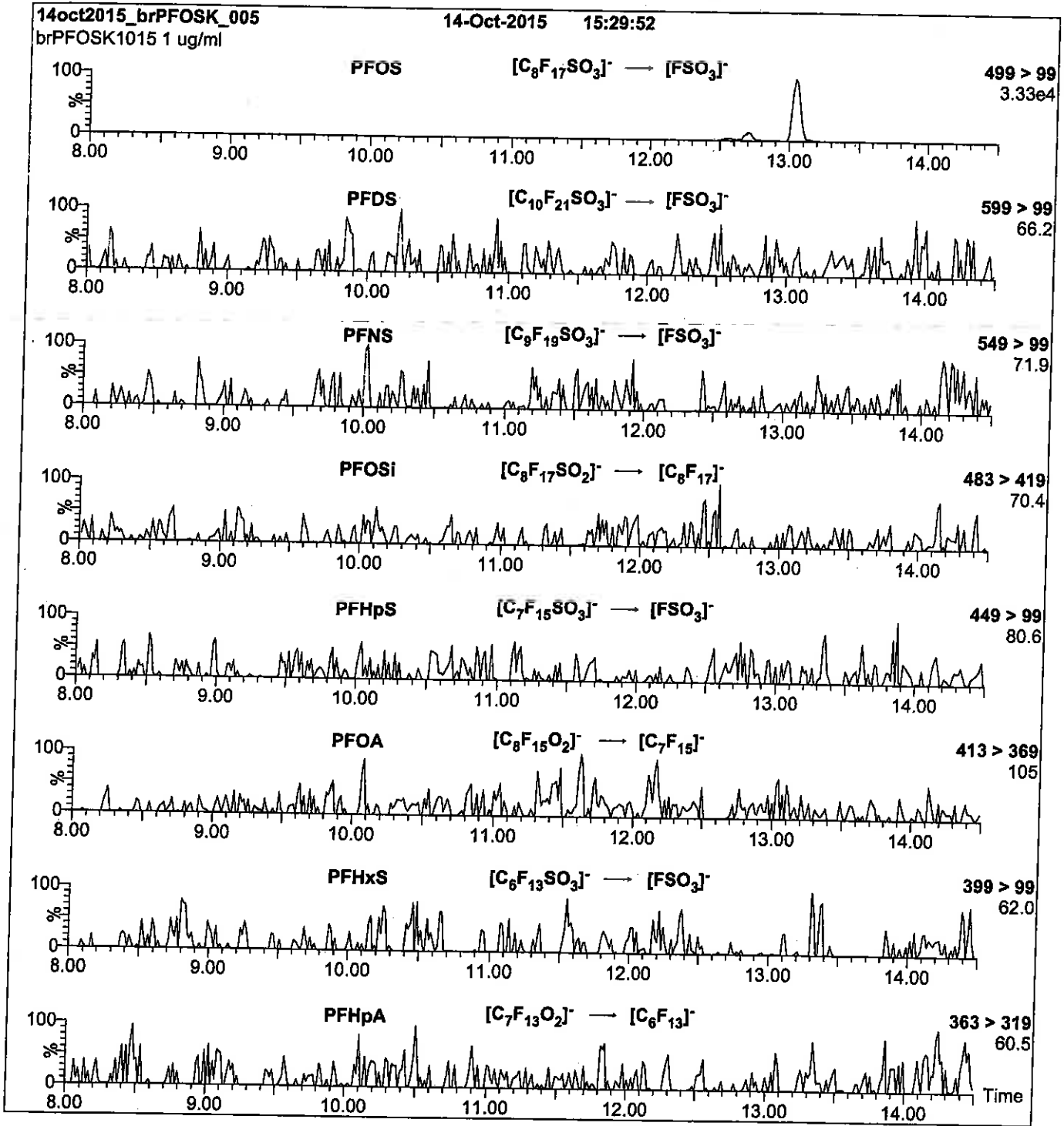
Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈ (1.7 μ m, 2.1 x 100 mm)
Injection: 1.0 μ g/ml of br-PFOSK
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H₂O (both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min
Flow: 300 μ l/min

MS Conditions:

SIR (ES)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

Figure 3: br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 μ /min

MS Parameters

Collision Gas (mbar) = 3.06e-3

Collision Energy (eV) = 11-50 (variable)

Reagent

LCPFOSA_00010

12/2016 Spj

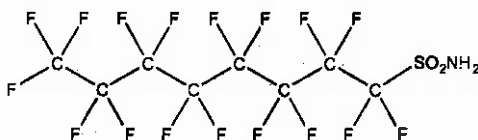


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FOSA-I **LOT NUMBER:** FOSA0916I
COMPOUND: Perfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** 754-91-6



MOLECULAR FORMULA: C₈H₂F₁₇NO₂S **MOLECULAR WEIGHT:** 499.14
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Isopropanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Refrigerate ampoule


DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

• See page 2 for further details.

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Certified By:  Date: 10/07/2016
B.G. Chittim (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

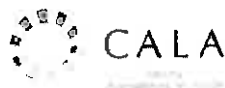
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

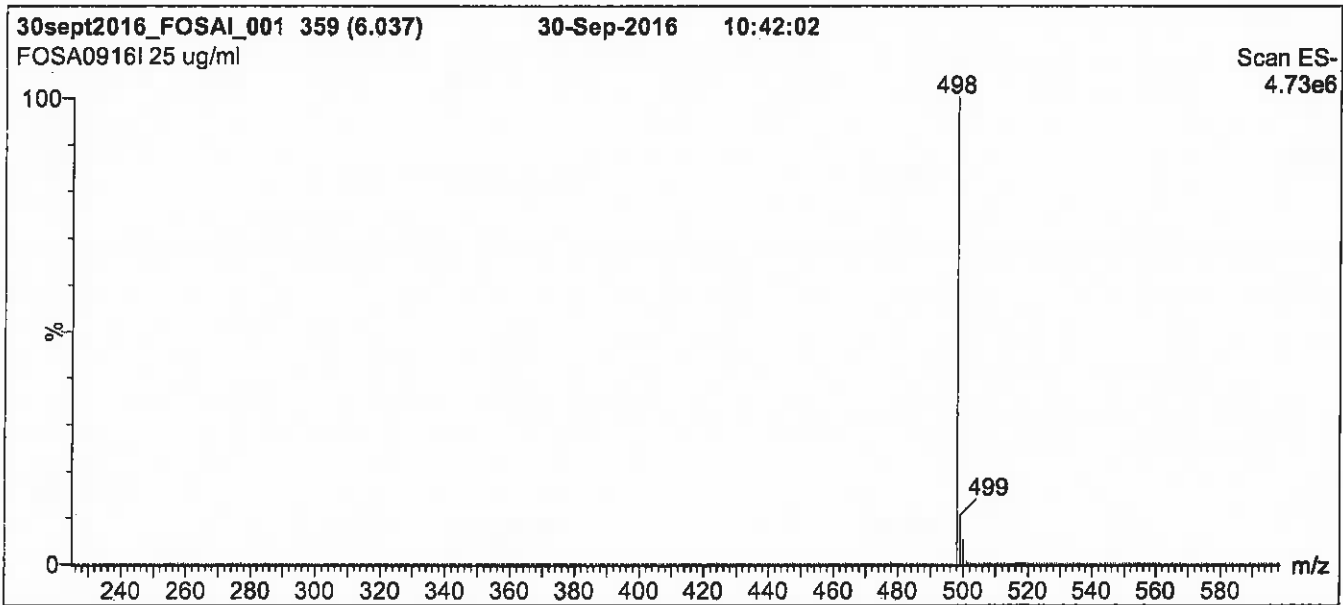
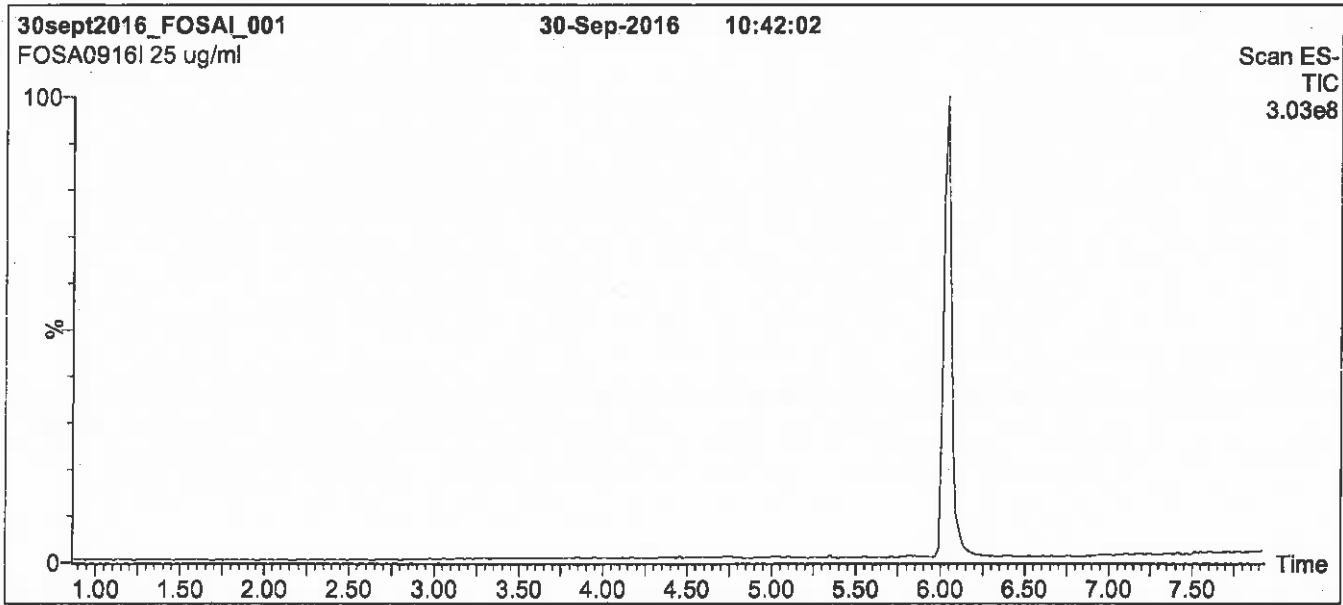
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP,
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

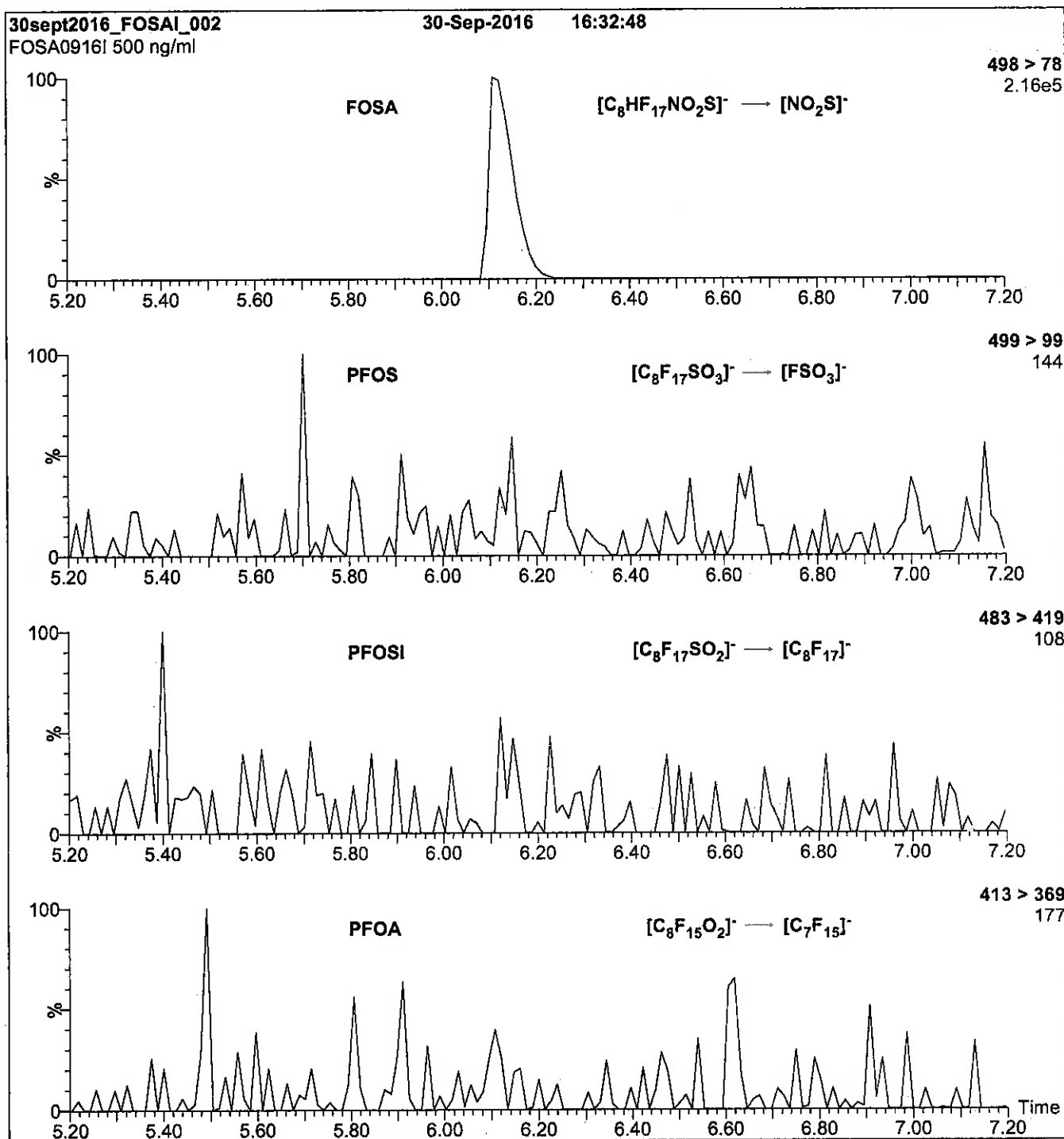
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
 Collision Energy (eV) = 30

Reagent

LCFPeA_00006

r: 12/21/16 Std
s: 1/6/17 Std

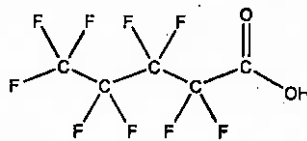


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFPeA **LOT NUMBER:** PFPeA0516
COMPOUND: Perfluoro-n-pentanoic acid

STRUCTURE: **CAS #:** 2706-90-3



MOLECULAR FORMULA: C₅HF₈O₂ **MOLECULAR WEIGHT:** 264.05
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/31/2016
EXPIRY DATE: (mm/dd/yyyy) 05/31/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

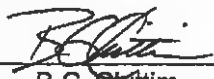
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of C₈H₂F₈O₂ (hydrido - derivative) as measured by ¹⁹F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 06/02/2016
B.G. Chittim (mm/dd/yyyy)

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EXPIRY DATE / PERIOD OF VALIDITY:

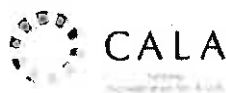
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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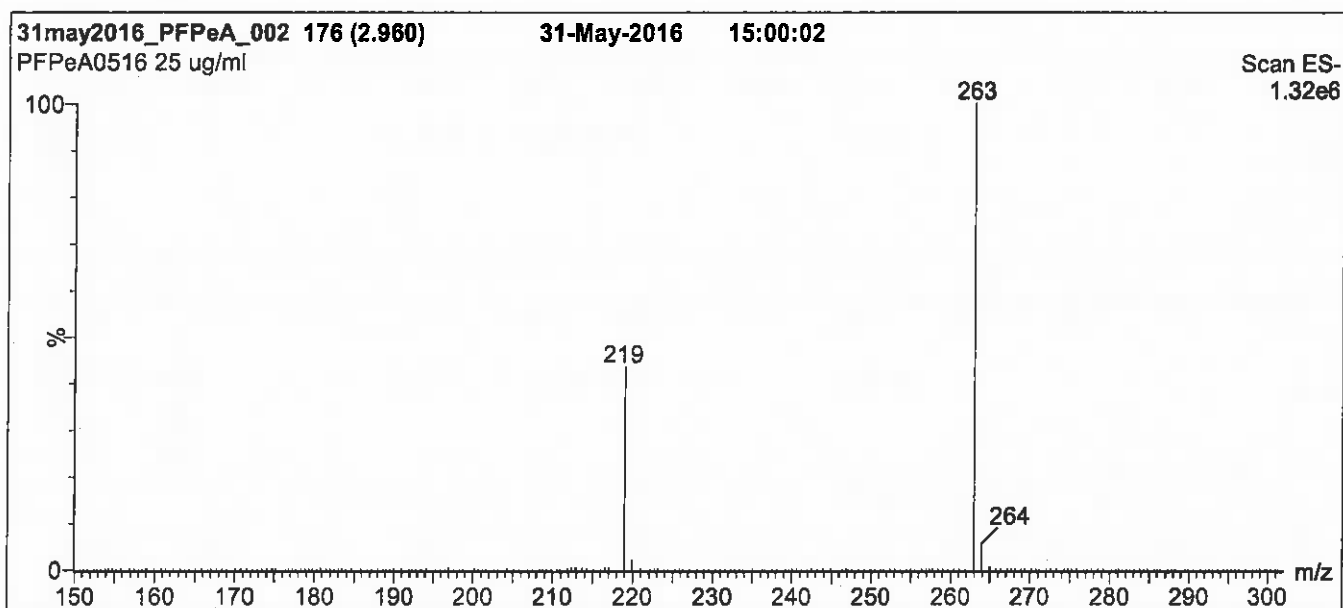
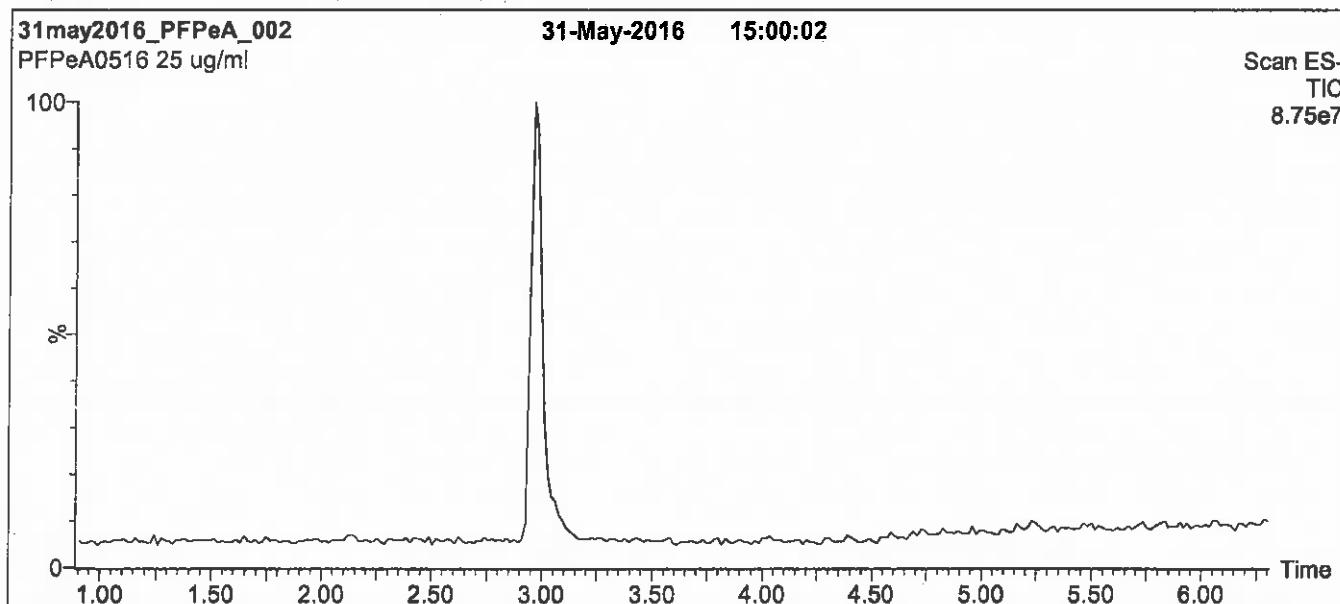
QUALITY MANAGEMENT:

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Figure 1: PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

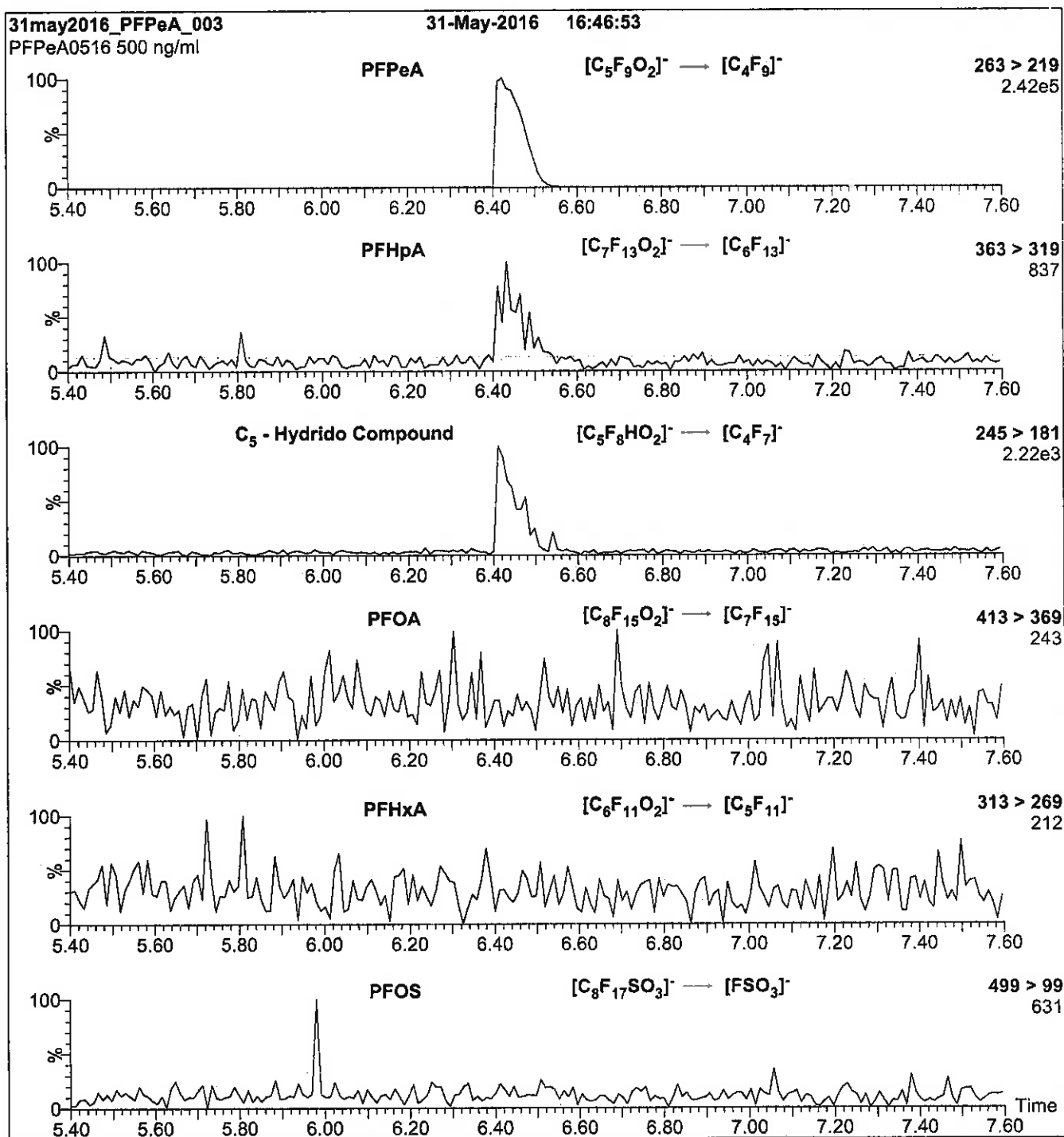
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFPeA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 9

Reagent

LCPFTeDA_00005

R: SBG 9/13/16



730645
ID: LCPFTeDA_00005
Exp: 12/09/20 Prpd: SBC
PF-n-tetradecanoic acid



730659
ID: LCPFTeDA_00006
Exp: 12/09/20 Prpd: SBC
PF-n-tetradecanoic acid



WELLINGTON LABORATORIES

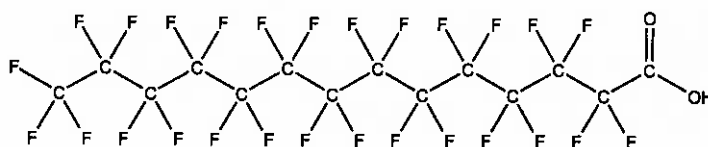
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA
COMPOUND: Perfluoro-n-tetradecanoic acid

LOT NUMBER: PFTeDA1215

STRUCTURE:

CAS #: 376-06-7



MOLECULAR FORMULA: C₁₄H₂₇F₂₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 714.11
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2015
EXPIRY DATE: (mm/dd/yyyy) 12/09/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA (C₁₂H₂₃F₂₃O₂) and ~ 0.2% of PFPeDA (C₁₆H₂₉F₂₉O₂).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 12/09/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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EXPIRY DATE / PERIOD OF VALIDITY:

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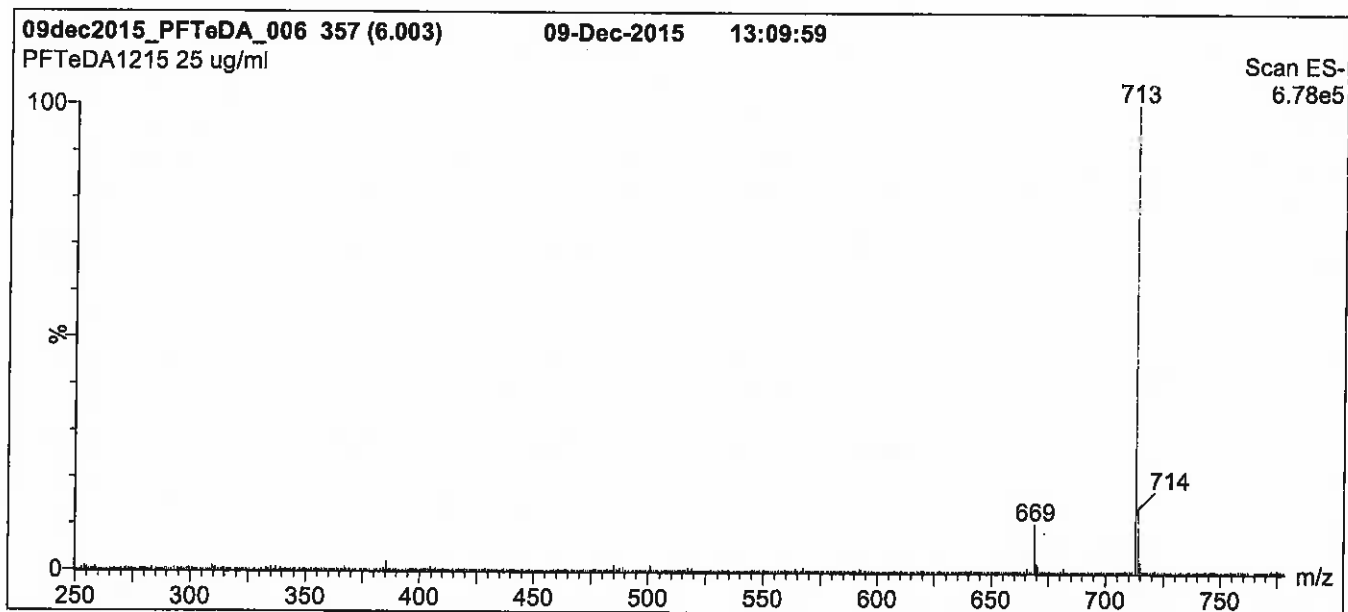
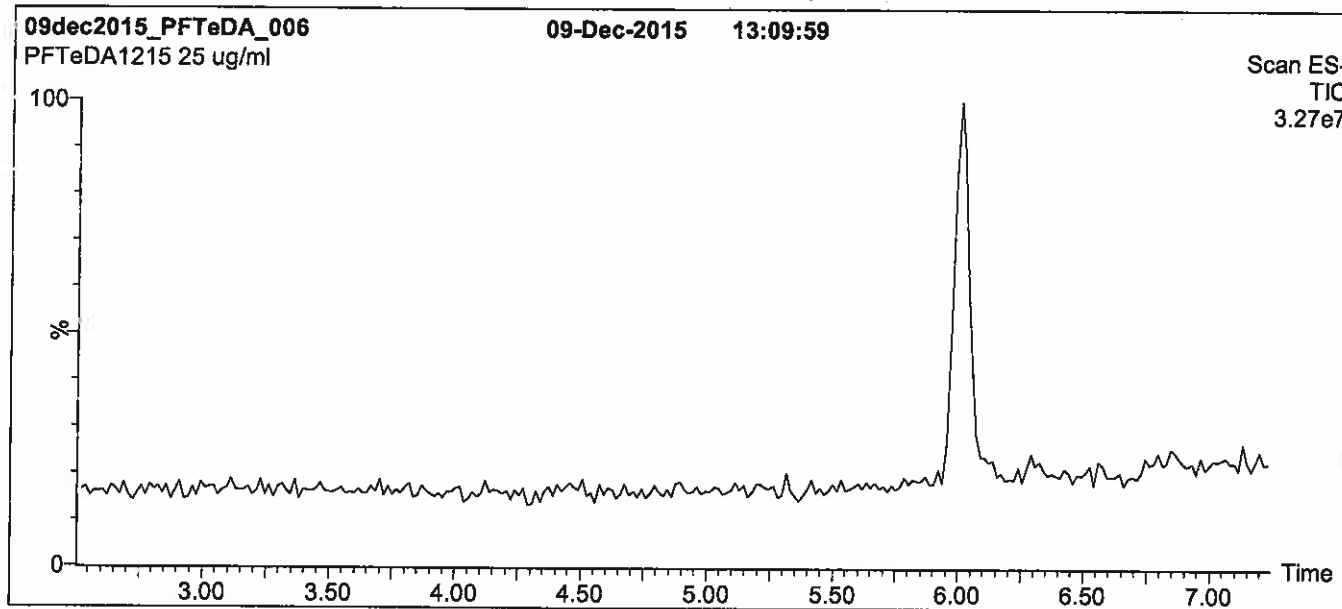
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Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

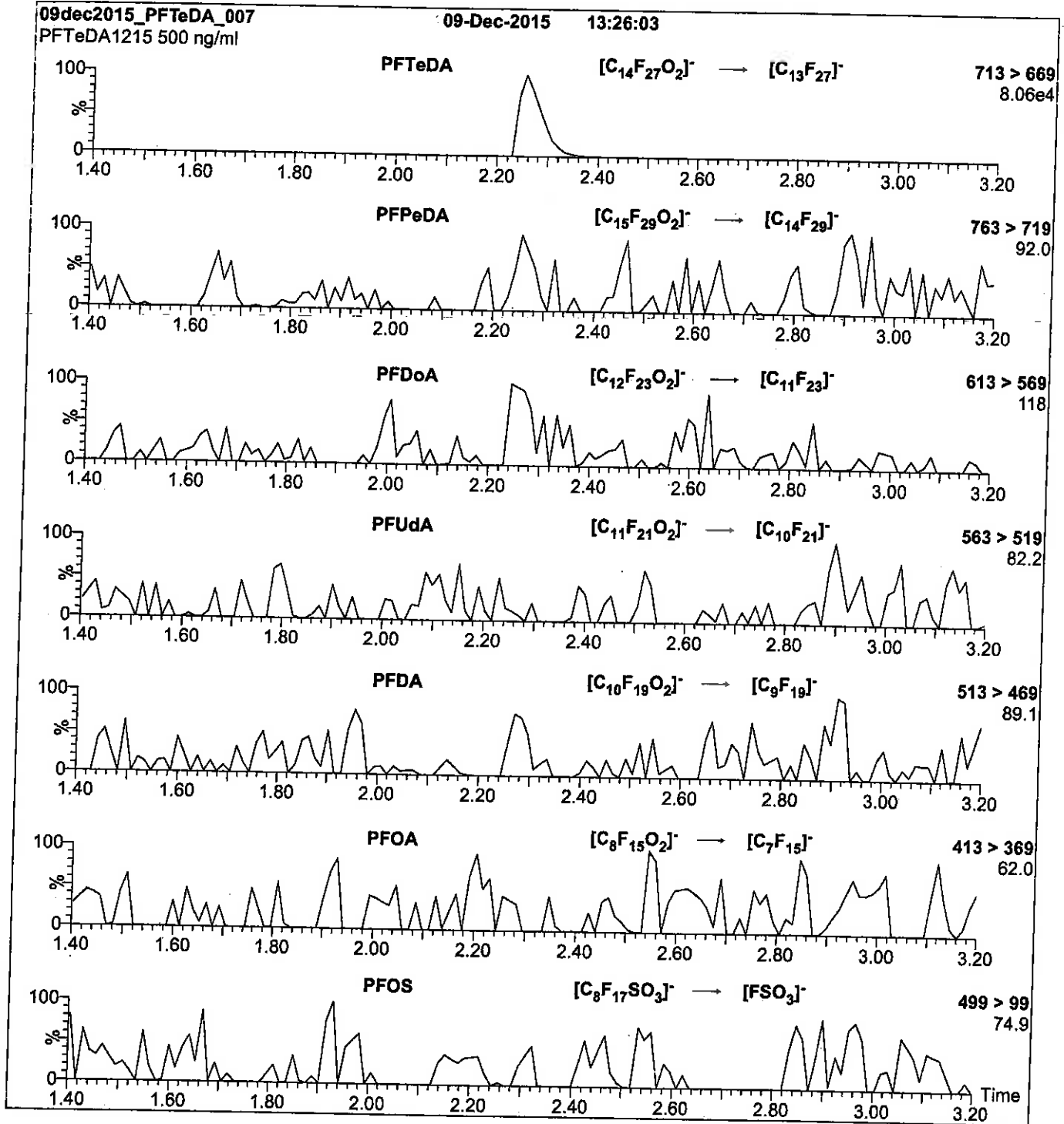
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFTeDA_00007

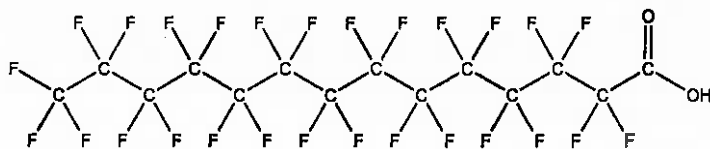


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA **LOT NUMBER:** PFTeDA0916
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE: **CAS #:** 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$ **MOLECULAR WEIGHT:** 714.11
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDcA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/05/2016
(mm/dd/yyyy)

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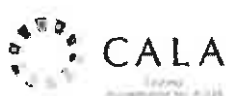
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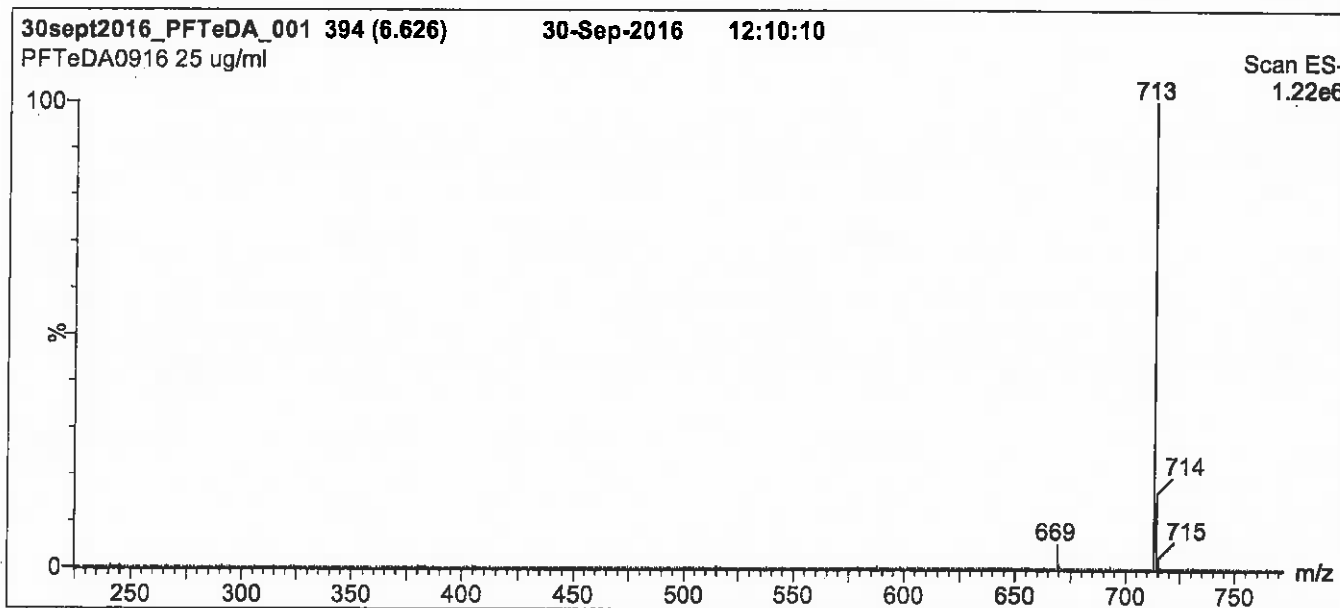
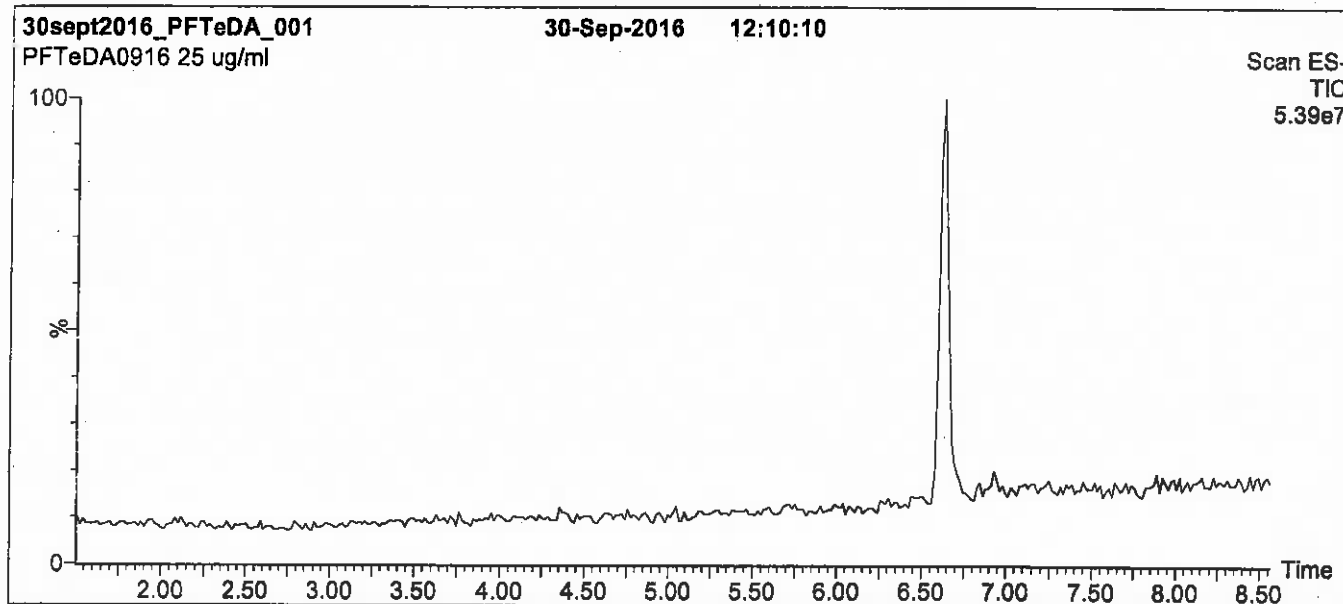
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

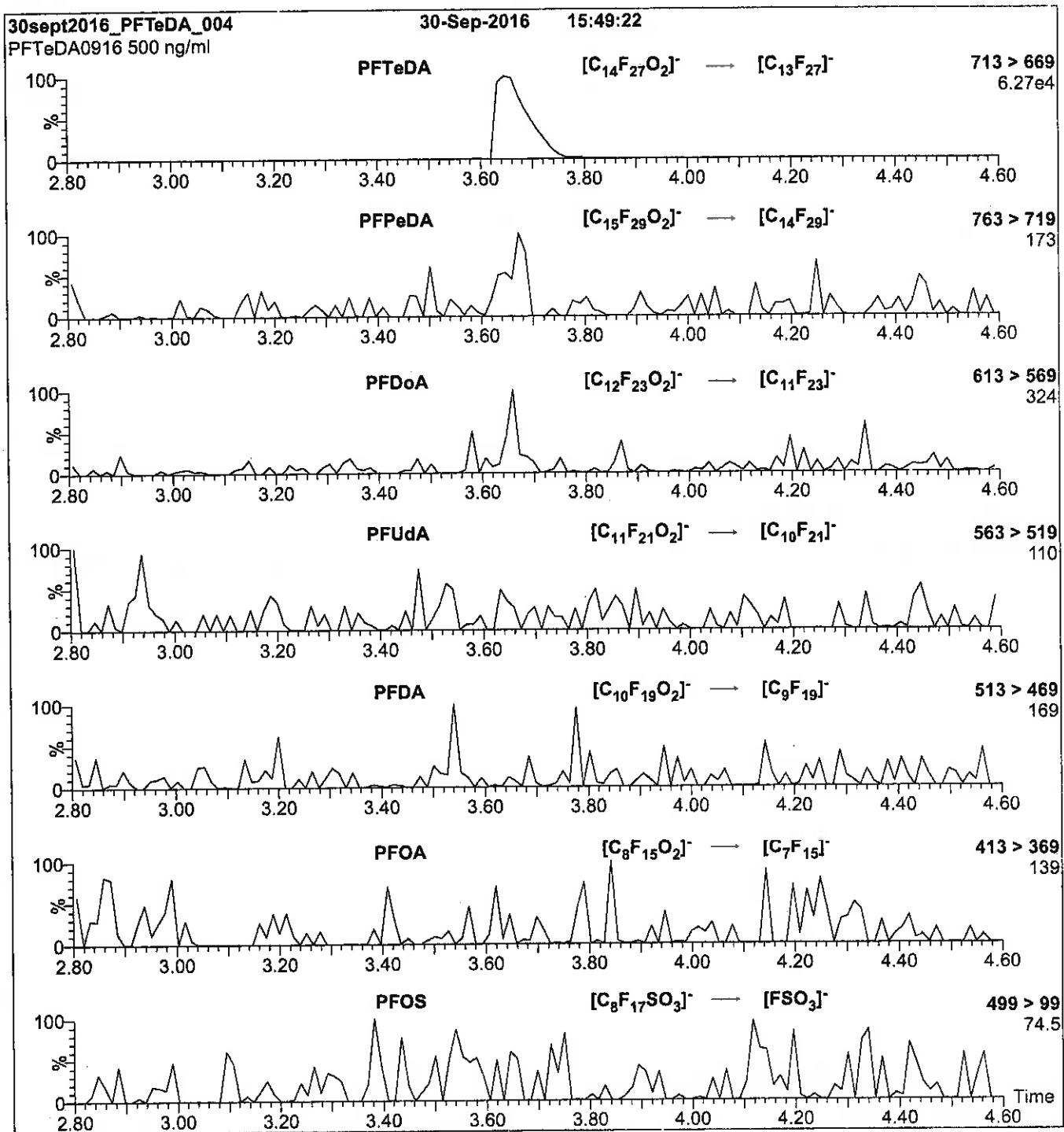
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 14

Reagent

LCPFT_rDA_00005

R: SBC 9/13/16



730665
ID: LCPFTrDA_00005
Exp: 02/12/21 Prod: SBC
PF-n-tridecanoic acid



730666
ID: LCPFTrDA_00006
Exp: 02/12/21 Prod: SBC
PF-n-tridecanoic acid

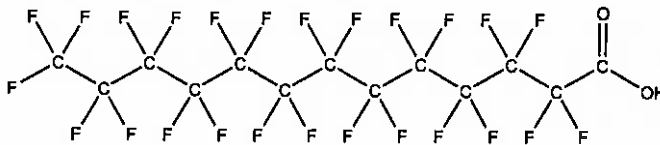


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LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA **LOT NUMBER:** PFTrDA0216
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE: **CAS #:** 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$ **MOLECULAR WEIGHT:** 664.11
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/12/2016
EXPIRY DATE: (mm/dd/yyyy) 02/12/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDdA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 02/16/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

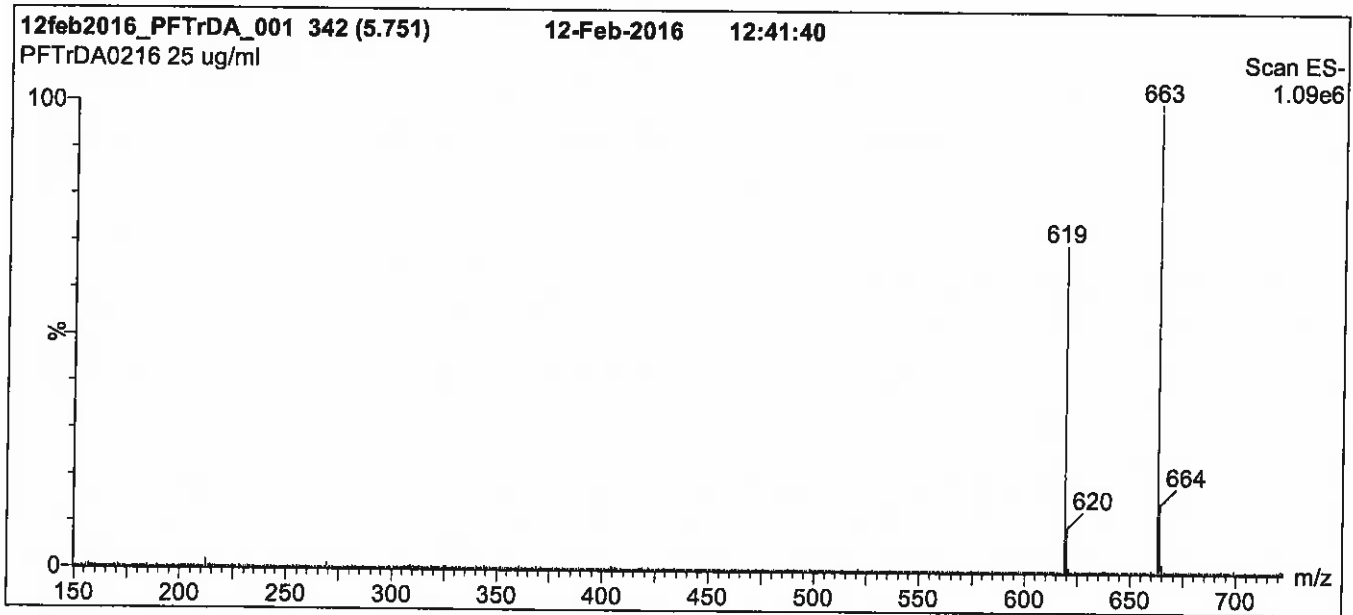
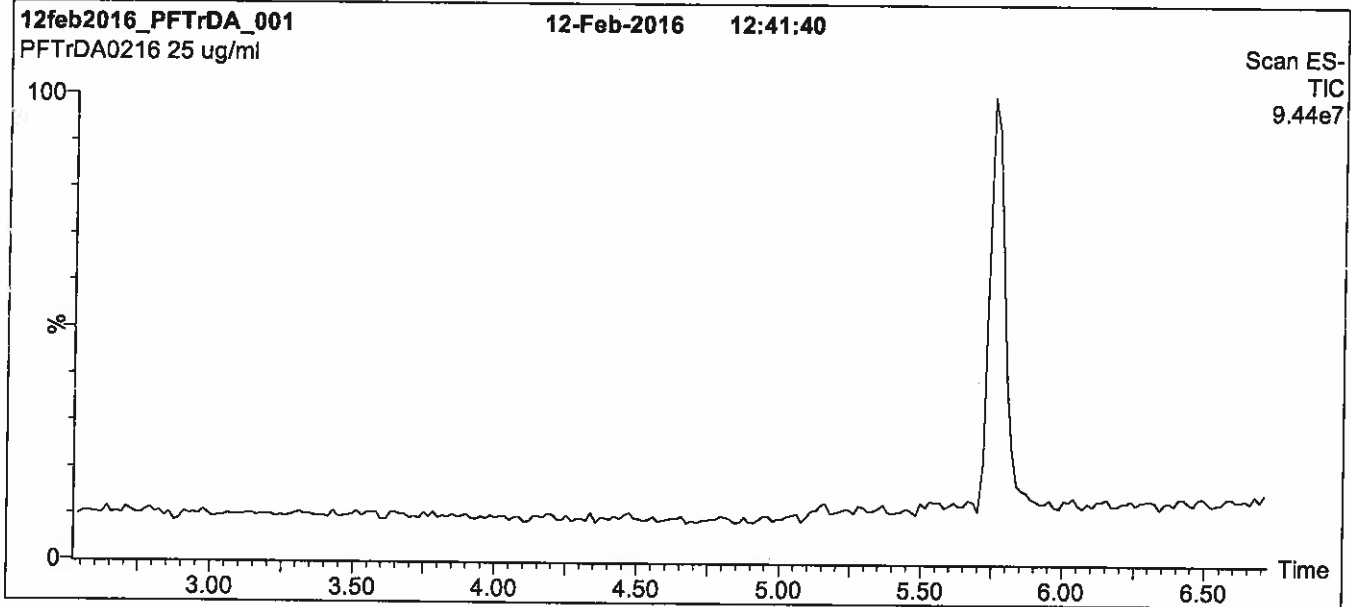
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFTTrDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

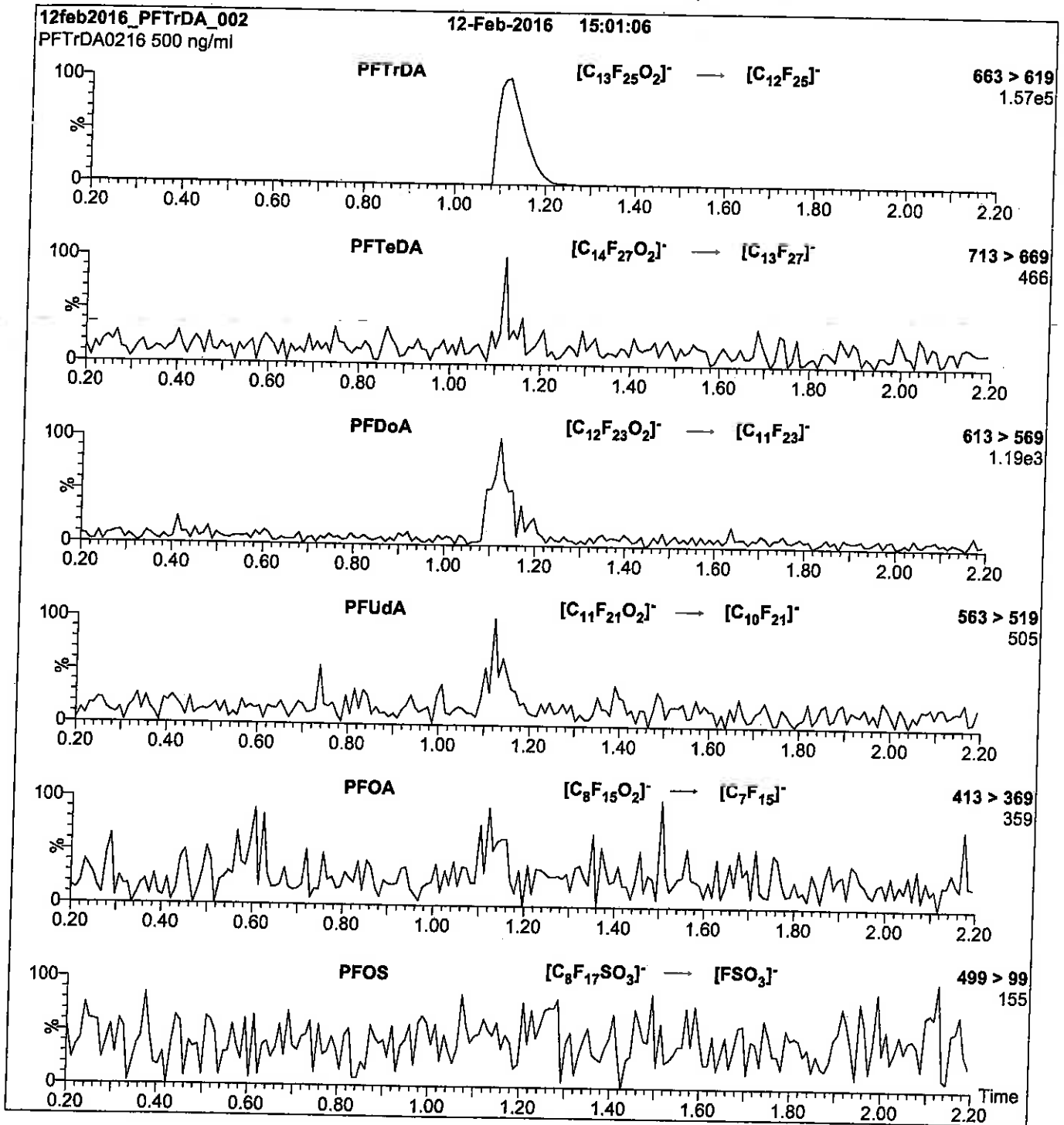
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

Figure 2: PFTrDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% MeOH / 20% H₂O

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

Reagent

LCPFT_rDA_00007

n : 12/29/16 SFL

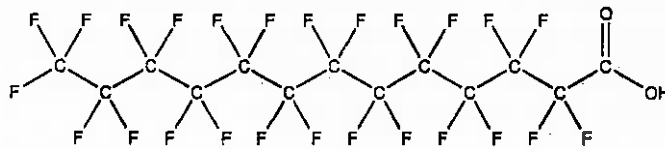


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTrDA **LOT NUMBER:** PFTrDA0216
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE: **CAS #:** 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$ **MOLECULAR WEIGHT:** 664.11
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/12/2016
EXPIRY DATE: (mm/dd/yyyy) 02/12/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/16/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

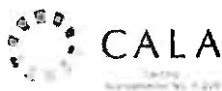
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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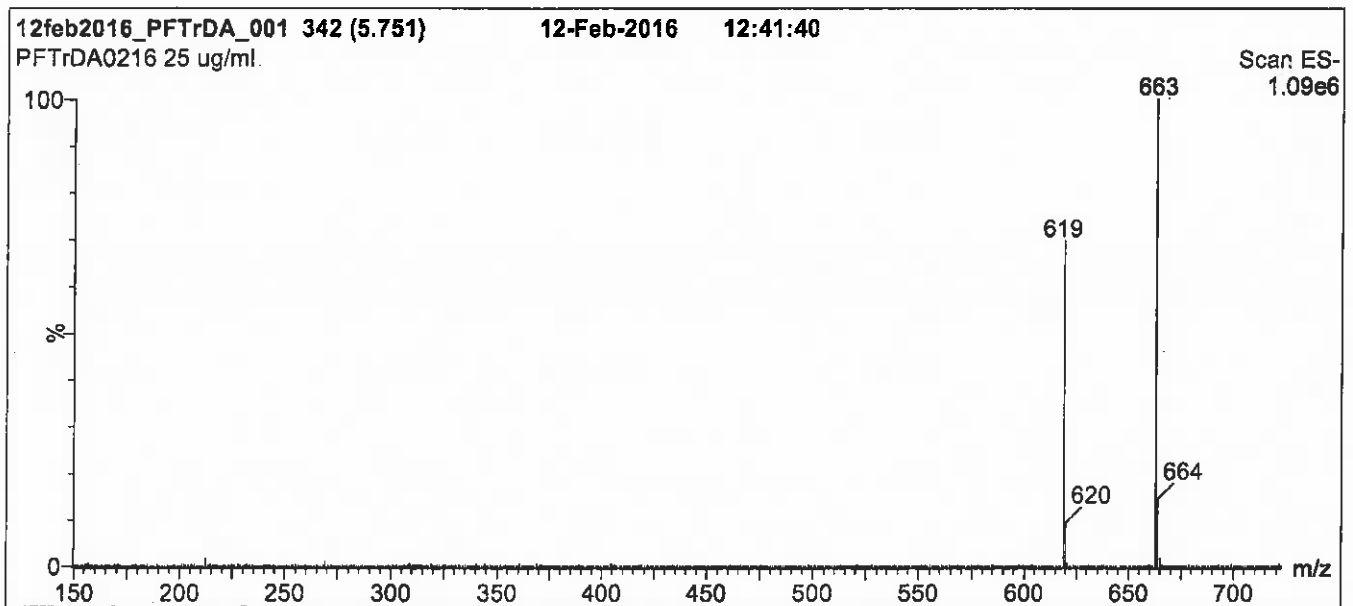
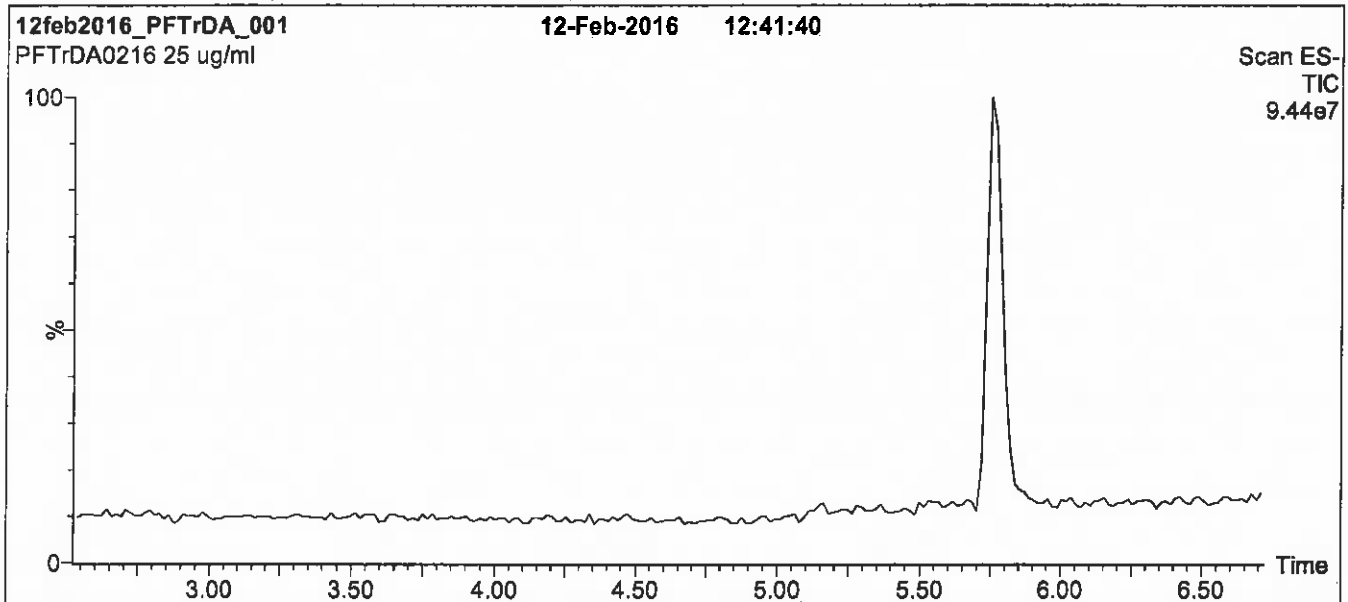
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1228), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFTTrDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

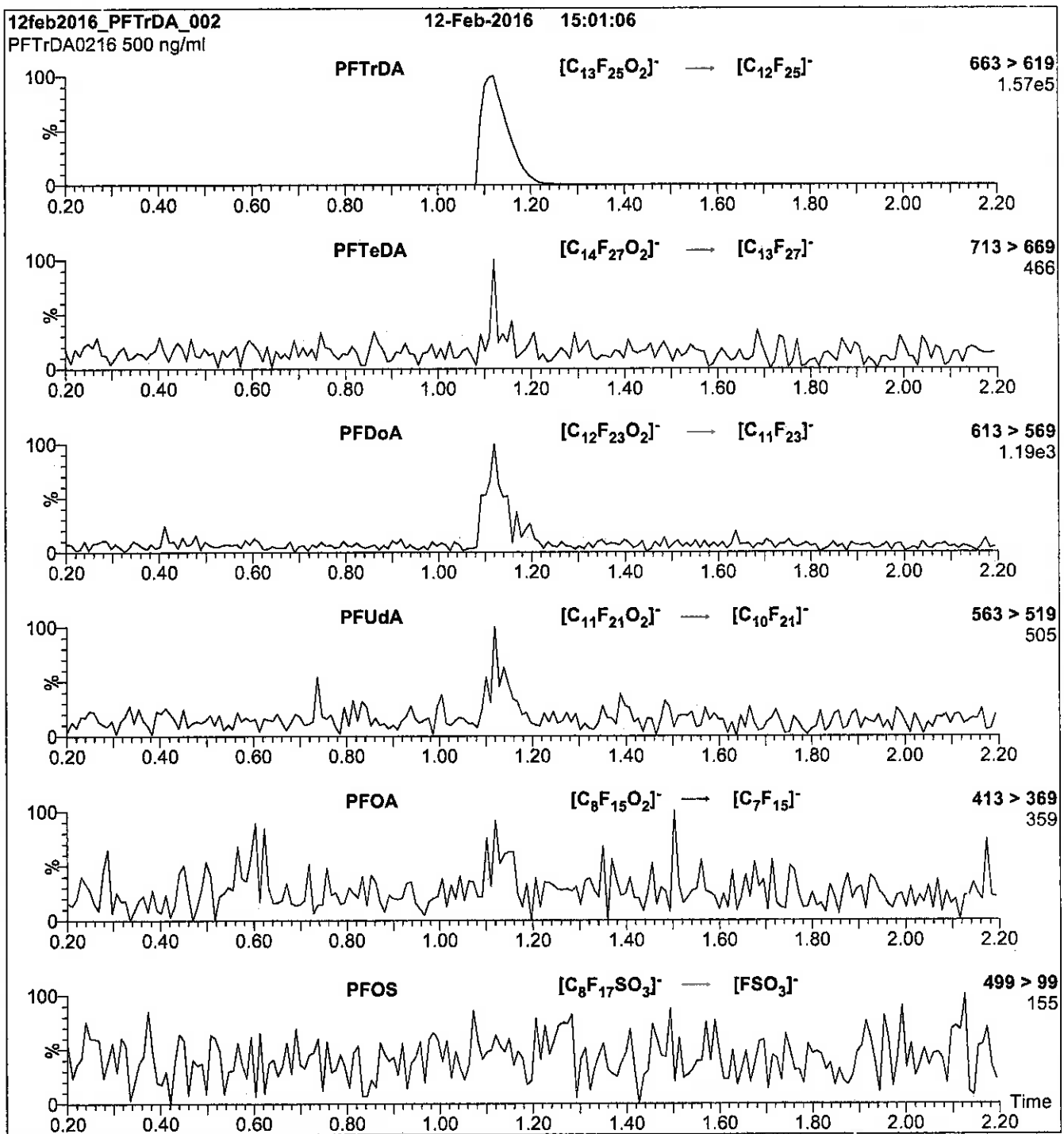
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

Figure 2: PFTrDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% MeOH / 20% H₂O

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

Reagent

LCPFUdA_00006

Scanned
10/14/16 R: SBC 9/13/16

730535
ID: LCPFUdA_00005
Exp: 08/19/20 Prj: SBC
PF-n-undecanoic acid

730536
ID: LCPFUdA_00006
Exp: 08/19/20 Prj: SBC
PF-n-undecanoic acid

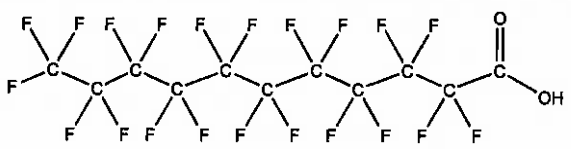


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFUdA **LOT NUMBER:** PFUdA0815
COMPOUND: Perfluoro-n-undecanoic acid

STRUCTURE: **CAS #:** 2058-94-8



MOLECULAR FORMULA: C₁₁HF₂₁O₂ **MOLECULAR WEIGHT:** 564.09
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/19/2015
EXPIRY DATE: (mm/dd/yyyy) 08/19/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 08/21/2015
B.G. Chittim (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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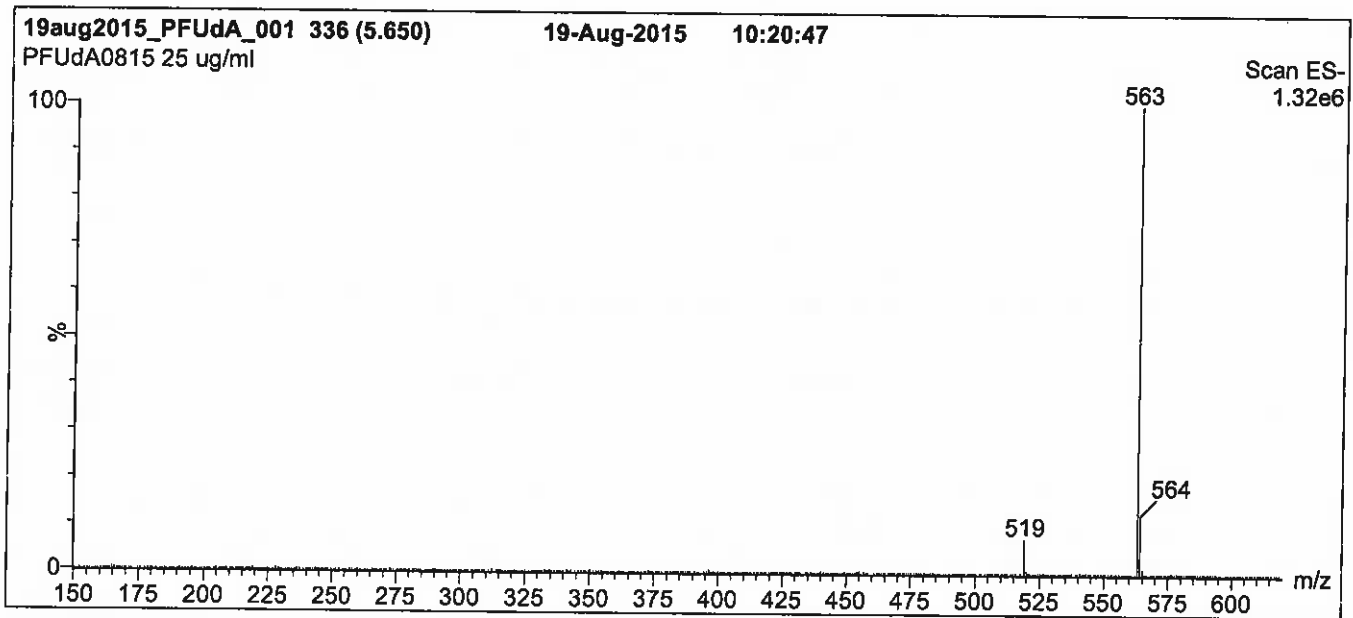
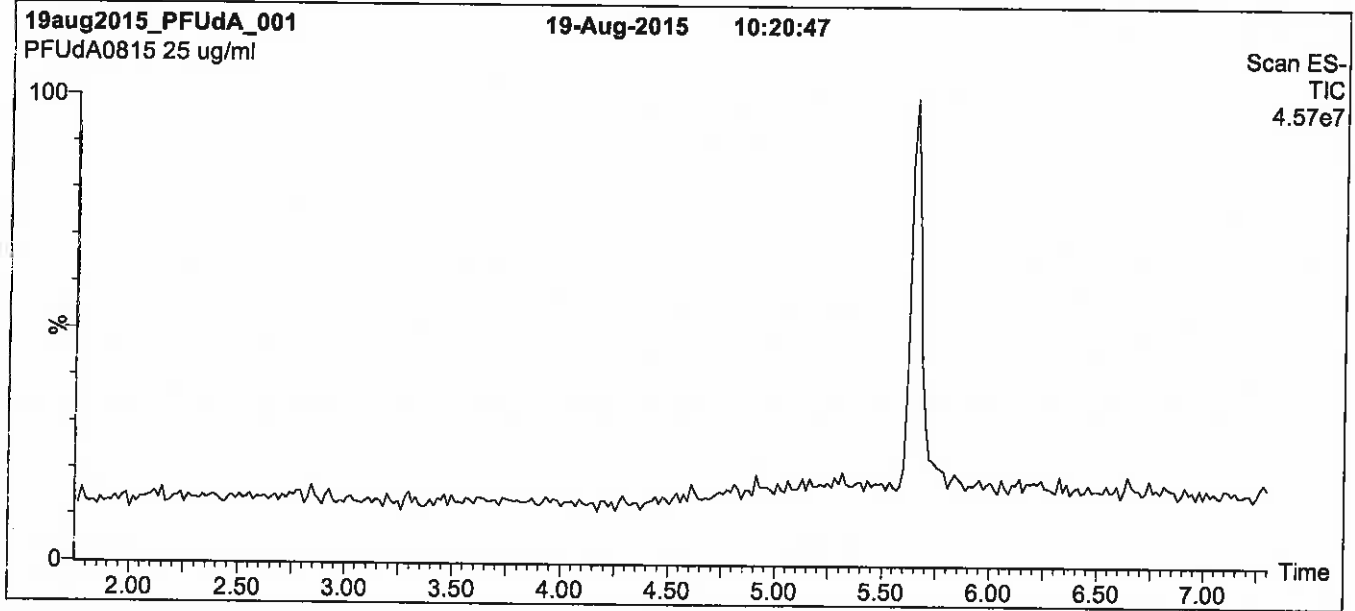
QUALITY MANAGEMENT:

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Figure 1: PFUdA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

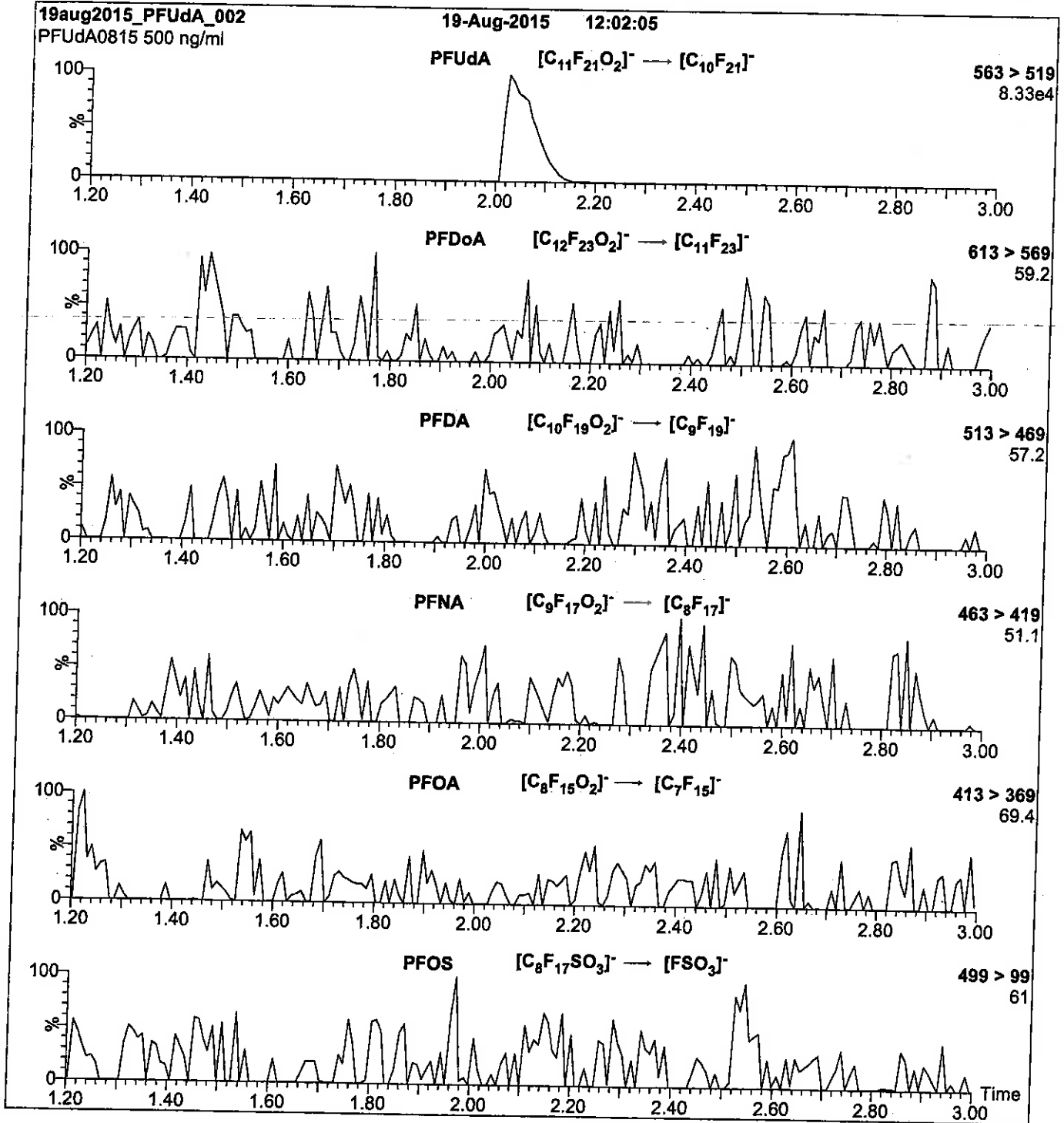
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 65
 Desolvation Gas Flow (l/hr) = 750

Figure 2: PFUdA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml PFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
 Collision Energy (eV) = 11

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS)
by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFBA # | PFPeA # | PFHxA # | PFHpA # | PFHxS # | PFOA # | PFNA # | PFOS # |
|------------------|------------------------|--------|---------|---------|---------|---------|--------|--------|--------|
| TP-PFC-019-TPE-D | 320-29732-4 | 96 | 98 | 98 | 118 | 106 | 111 | 91 | 100 |
| | MB 320-174599/1-A | 113 | 112 | 115 | 148 | 111 | 136 | 123 | 105 |
| | LCS 320-174599/2-A | 100 | 101 | 102 | 135 | 97 | 119 | 109 | 93 |
| | LCSD 320-174599/3-A | 97 | 101 | 105 | 132 | 97 | 125 | 111 | 96 |

PFBA = 13C4 PFBA
 PFPeA = 13C5 PFPeA
 PFHxA = 13C2 PFHxA
 PFHpA = 13C4-PFHpA
 PFHxS = 18O2 PFHxS
 PFOA = 13C4 PFOA
 PFOS = 13C4 PFOS
 PFNA = 13C5 PFNA

QC LIMITS

25-150
 25-150
 25-150
 25-150
 25-150
 25-150
 25-150
 25-150

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFDA # | PFOSA # | PFUnA # | PFDoA # |
|------------------|------------------------|--------|---------|---------|---------|
| TP-PFC-019-TPE-D | 320-29732-4 | 85 | 0.3 Q | 67 | 70 |
| | MB 320-174599/1-A | 138 | 47 | 137 | 114 |
| | LCS 320-174599/2-A | 126 | 17 Q | 110 | 97 |
| | LCSD 320-174599/3-A | 128 | 20 Q | 117 | 101 |

PFDA = 13C2 PFDA
PFOSA = 13C8 FOSA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA

QC LIMITS
25-150
25-150
25-150
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFBA # | PFPeA # | PFHxA # | PFHpA # | PFHxS # | PFOA # | PFNA # | PFOS # |
|---------------------------|------------------------|--------|---------|---------|---------|---------|--------|--------|--------|
| TP-PFC-019-TPI | 320-29732-1 | 77 | 80 | 71 | 93 | 87 | 67 | 66 | 83 |
| TP-PFC-019-TPI DL | 320-29732-1 DL | 98 | 95 | 94 | 105 | 96 | 88 | 77 | 82 |
| TP-PFC-019-MID-CAR BON | 320-29732-2 | 101 | 102 | 100 | 116 | 102 | 102 | 81 | 99 |
| TP-PFC-019-TPE | 320-29732-3 | 102 | 98 | 101 | 118 | 105 | 102 | 85 | 102 |
| | MB 320-175097/1-A | 103 | 105 | 100 | 114 | 96 | 110 | 102 | 93 |
| | LCS 320-175097/2-A | 101 | 102 | 100 | 119 | 101 | 113 | 98 | 94 |
| | LCSD 320-175097/3-A | 111 | 104 | 105 | 124 | 108 | 116 | 105 | 95 |

| | <u>QC LIMITS</u> |
|--------------------|------------------|
| PFBA = 13C4 PFBA | 25-150 |
| PFPeA = 13C5 PFPeA | 25-150 |
| PFHxA = 13C2 PFHxA | 25-150 |
| PFHpA = 13C4-PFHpA | 25-150 |
| PFHxS = 1802 PFHxS | 25-150 |
| PFOA = 13C4 PFOA | 25-150 |
| PFOS = 13C4 PFOS | 25-150 |
| PFNA = 13C5 PFNA | 25-150 |

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFOSA # | PFDA # | PFUnA # | PFDoA # |
|---------------------------|------------------------|---------|--------|---------|---------|
| TP-PFC-019-TPI | 320-29732-1 | 14 Q | 65 | 48 | 45 |
| TP-PFC-019-TPI DL | 320-29732-1 DL | 15 Q | 62 | 54 | 47 |
| TP-PFC-019-MID-CAR BON | 320-29732-2 | 6 Q | 72 | 63 | 58 |
| TP-PFC-019-TPE | 320-29732-3 | 2 Q | 93 | 78 | 69 |
| | MB 320-175097/1-A | 51 | 118 | 98 | 84 |
| | LCS 320-175097/2-A | 7 Q | 120 | 104 | 86 |
| | LCSD 320-175097/3-A | 25 | 128 | 104 | 94 |

PFOSA = 13C8 FOSA
 PFDA = 13C2 PFDA
 PFUnA = 13C2 PFUnA
 PFDoA = 13C2 PFDoA

QC LIMITS
 25-150
 25-150
 25-150
 25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFD _o A # |
|------------------------------|------------------------|----------------------|
| TP-PFC-019-TPI RE | 320-29732-1 RE | 67 |
| TP-PFC-019-MID-CAR BON RE | 320-29732-2 RE | 92 |
| TP-PFC-019-TPE RE | 320-29732-3 RE | 87 |
| | MB 320-175074/1-A | 116 |
| | LCS 320-175074/2-A | 105 |
| | LCSD 320-175074/3-A | 106 |

PFD_oA = 13C2 PFD_oA

QC LIMITS
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFOSA # |
|------------------------|------------------------|---------|
| TP-PFC-019-TPE-D RE | 320-29732-4 RE | 2 Q |
| | MB 320-175742/1-A | 63 |
| | LCS 320-175742/2-A | 62 |
| | LCSD 320-175742/3-A | 55 |

PFOSA = 13C8 FOSA

QC LIMITS
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2017.07.21C_017.d

Lab ID: LCS 320-174599/2-A

Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|---------------------------------------|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorobutanoic acid (PFBA) | 40.0 | 44.8 | 112 | 60-140 | |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 42.2 | 106 | 60-140 | |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 42.7 | 107 | 60-140 | |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 40.6 | 102 | 60-140 | |
| Perfluorooctanoic acid (PFOA) | 40.0 | 42.1 | 105 | 60-140 | |
| Perfluorononanoic acid (PFNA) | 40.0 | 42.6 | 106 | 60-140 | |
| Perfluorodecanoic acid (PFDA) | 40.0 | 43.8 | 110 | 60-140 | |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 43.8 | 109 | 60-140 | |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 43.5 | 109 | 60-140 | |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 43.4 | 109 | 50-150 | |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 48.6 | 122 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 38.5 | 109 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 38.9 | 107 | 60-140 | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 44.7 | 117 | 50-150 | |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 40.0 | 108 | 60-140 | |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 39.6 | 103 | 50-150 | |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 42.9 | 107 | 60-140 | |
| 13C8 FOSA | 100 | 17.3 | 17 | 25-150 | Q |
| 13C4 PFBA | 100 | 99.7 | 100 | 25-150 | |
| 13C2 PFHxA | 100 | 102 | 102 | 25-150 | |
| 13C4 PFOA | 100 | 119 | 119 | 25-150 | |
| 13C5 PFNA | 100 | 109 | 109 | 25-150 | |
| 13C2 PFDA | 100 | 126 | 126 | 25-150 | |
| 13C2 PFUnA | 100 | 110 | 110 | 25-150 | |
| 13C2 PFDoA | 100 | 96.6 | 97 | 25-150 | |
| 18O2 PFHxS | 94.6 | 91.8 | 97 | 25-150 | |
| 13C4 PFOS | 95.6 | 89.3 | 93 | 25-150 | |
| 13C4-PFHpA | 100 | 135 | 135 | 25-150 | |
| 13C5 PFPeA | 100 | 101 | 101 | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.07.25B_003.d
 Lab ID: LCS 320-175074/2-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|--|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 58.6 | 146 | 50-150 | |
| 13C2 PFDoA | 100 | 105 | 105 | 25-150 | |

Column to be used to flag recovery and RPD values
 FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2017.07.23A_003.d

Lab ID: LCS 320-175097/2-A

Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|---------------------------------------|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorobutanoic acid (PFBA) | 40.0 | 43.9 | 110 | 60-140 | |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 40.4 | 101 | 60-140 | |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 41.9 | 105 | 60-140 | |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 42.1 | 105 | 60-140 | |
| Perfluorooctanoic acid (PFOA) | 40.0 | 39.8 | 100 | 60-140 | |
| Perfluorononanoic acid (PFNA) | 40.0 | 42.2 | 105 | 60-140 | |
| Perfluorodecanoic acid (PFDA) | 40.0 | 42.6 | 107 | 60-140 | |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 41.4 | 104 | 60-140 | |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 46.3 | 116 | 60-140 | |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 54.0 | 135 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 39.2 | 111 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 35.8 | 98 | 60-140 | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 44.5 | 117 | 50-150 | |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 38.2 | 103 | 60-140 | |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 42.5 | 110 | 50-150 | |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 43.1 | 108 | 60-140 | |
| 13C8 FOSA | 100 | 6.86 | 7 | 25-150 | Q |
| 13C4 PFBA | 100 | 101 | 101 | 25-150 | |
| 13C2 PFHxA | 100 | 100 | 100 | 25-150 | |
| 13C4 PFOA | 100 | 113 | 113 | 25-150 | |
| 13C5 PFNA | 100 | 97.6 | 98 | 25-150 | |
| 13C2 PFDA | 100 | 120 | 120 | 25-150 | |
| 13C2 PFUnA | 100 | 104 | 104 | 25-150 | |
| 13C2 PFDoA | 100 | 85.8 | 86 | 25-150 | |
| 18O2 PFHxS | 94.6 | 95.7 | 101 | 25-150 | |
| 13C4 PFOS | 95.6 | 89.9 | 94 | 25-150 | |
| 13C4-PFHpA | 100 | 119 | 119 | 25-150 | |
| 13C5 PFPeA | 100 | 102 | 102 | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.07.27C_003.d
 Lab ID: LCS 320-175742/2-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|---------------------------------------|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 44.4 | 111 | 60-140 | |
| 13C8 FOSA | 100 | 62.0 | 62 | 25-150 | |

Column to be used to flag recovery and RPD values
 FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2017.07.21C_018.d

Lab ID: LCSD 320-174599/3-A

Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCSD CONCENTRATION (ng/L) | LCSD % REC | % RPD | QC LIMITS | | # |
|---------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorobutanoic acid (PFBA) | 40.0 | 47.2 | 118 | 5 | 30 | 60-140 | |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 43.9 | 110 | 4 | 30 | 60-140 | |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 42.9 | 107 | 0 | 30 | 60-140 | |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 43.3 | 108 | 6 | 30 | 60-140 | |
| Perfluorooctanoic acid (PFOA) | 40.0 | 42.9 | 107 | 2 | 30 | 60-140 | |
| Perfluorononanoic acid (PFNA) | 40.0 | 42.8 | 107 | 1 | 30 | 60-140 | |
| Perfluorodecanoic acid (PFDA) | 40.0 | 42.5 | 106 | 3 | 30 | 60-140 | |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 40.6 | 101 | 8 | 30 | 60-140 | |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 43.8 | 109 | 1 | 30 | 60-140 | |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 46.6 | 117 | 7 | 30 | 50-150 | |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 49.4 | 123 | 2 | 30 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 37.4 | 106 | 3 | 30 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 38.5 | 106 | 1 | 30 | 60-140 | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 41.6 | 109 | 7 | 30 | 50-150 | |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 39.2 | 106 | 2 | 30 | 60-140 | |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 38.4 | 100 | 3 | 30 | 50-150 | |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 43.3 | 108 | 1 | 30 | 60-140 | |
| 13C8 FOSA | 100 | 20.3 | 20 | | | 25-150 | Q |
| 13C4 PFBA | 100 | 97.0 | 97 | | | 25-150 | |
| 13C2 PFHxA | 100 | 105 | 105 | | | 25-150 | |
| 13C4 PFOA | 100 | 125 | 125 | | | 25-150 | |
| 13C5 PFNA | 100 | 111 | 111 | | | 25-150 | |
| 13C2 PFDA | 100 | 128 | 128 | | | 25-150 | |
| 13C2 PFUnA | 100 | 117 | 117 | | | 25-150 | |
| 13C2 PFDoA | 100 | 101 | 101 | | | 25-150 | |
| 18O2 PFHxS | 94.6 | 92.2 | 97 | | | 25-150 | |
| 13C4 PFOS | 95.6 | 91.5 | 96 | | | 25-150 | |
| 13C4-PFHpA | 100 | 132 | 132 | | | 25-150 | |
| 13C5 PFPeA | 100 | 101 | 101 | | | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2017.07.25B_004.d

Lab ID: LCSD 320-175074/3-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCSD CONCENTRATION (ng/L) | LCSD % REC | % RPD | QC LIMITS | | # |
|--|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 64.6 | 162 | 10 | 30 | 50-150 | Q |
| 13C2 PFDoA | 100 | 106 | 106 | | | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2017.07.23A_004.d

Lab ID: LCSD 320-175097/3-A

Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCSD CONCENTRATION (ng/L) | LCSD % REC | % RPD | QC LIMITS | | # |
|---------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorobutanoic acid (PFBA) | 40.0 | 45.8 | 114 | 4 | 30 | 60-140 | |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 43.1 | 108 | 6 | 30 | 60-140 | |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 43.2 | 108 | 3 | 30 | 60-140 | |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 42.3 | 106 | 0 | 30 | 60-140 | |
| Perfluorooctanoic acid (PFOA) | 40.0 | 41.6 | 104 | 4 | 30 | 60-140 | |
| Perfluorononanoic acid (PFNA) | 40.0 | 40.9 | 102 | 3 | 30 | 60-140 | |
| Perfluorodecanoic acid (PFDA) | 40.0 | 39.8 | 100 | 7 | 30 | 60-140 | |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 42.6 | 107 | 3 | 30 | 60-140 | |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 45.0 | 113 | 3 | 30 | 60-140 | |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 48.6 | 122 | 10 | 30 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 39.5 | 112 | 1 | 30 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 35.3 | 97 | 1 | 30 | 60-140 | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 45.3 | 119 | 2 | 30 | 50-150 | |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 41.3 | 111 | 8 | 30 | 60-140 | |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 43.3 | 112 | 2 | 30 | 50-150 | |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 44.6 | 112 | 3 | 30 | 60-140 | |
| 13C8 FOSA | 100 | 25.1 | 25 | | | 25-150 | |
| 13C4 PFBA | 100 | 111 | 111 | | | 25-150 | |
| 13C2 PFHxA | 100 | 105 | 105 | | | 25-150 | |
| 13C4 PFOA | 100 | 116 | 116 | | | 25-150 | |
| 13C5 PFNA | 100 | 105 | 105 | | | 25-150 | |
| 13C2 PFDA | 100 | 128 | 128 | | | 25-150 | |
| 13C2 PFUnA | 100 | 104 | 104 | | | 25-150 | |
| 13C2 PFDoA | 100 | 93.7 | 94 | | | 25-150 | |
| 18O2 PFHxS | 94.6 | 103 | 108 | | | 25-150 | |
| 13C4 PFOS | 95.6 | 91.2 | 95 | | | 25-150 | |
| 13C4-PFHpA | 100 | 124 | 124 | | | 25-150 | |
| 13C5 PFPeA | 100 | 104 | 104 | | | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2017.07.27C_004.d

Lab ID: LCSD 320-175742/3-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCSD CONCENTRATION (ng/L) | LCSD % REC | % RPD | QC LIMITS | | # |
|---------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 45.0 | 112 | 1 | 30 | 60-140 | |
| 13C8 FOSA | 100 | 55.3 | 55 | | | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab File ID: 2017.07.21C_016.d Lab Sample ID: MB 320-174599/1-A
 Matrix: Water Date Extracted: 07/18/2017 07:22
 Instrument ID: A8_N Date Analyzed: 07/21/2017 20:45
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|------------------|---------------------|----------------------|------------------|
| | LCS 320-174599/2-A | 2017.07.21C 017.d | 07/21/2017 20:52 |
| | LCSD 320-174599/3-A | 2017.07.21C 018.d | 07/21/2017 20:59 |
| TP-PFC-019-TPE-D | 320-29732-4 | 2017.07.21C 019.d | 07/21/2017 21:06 |

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab File ID: 2017.07.25B_002.d Lab Sample ID: MB 320-175074/1-A
 Matrix: Water Date Extracted: 07/20/2017 09:15
 Instrument ID: A8_N Date Analyzed: 07/25/2017 14:17
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|--------------------------|---------------------|----------------------|------------------|
| | LCS 320-175074/2-A | 2017.07.25B 003.d | 07/25/2017 14:24 |
| | LCSD 320-175074/3-A | 2017.07.25B 004.d | 07/25/2017 14:31 |
| TP-PFC-019-TPI RE | 320-29732-1 RE | 2017.07.25B 009.d | 07/25/2017 15:05 |
| TP-PFC-019-MID-CARBON RE | 320-29732-2 RE | 2017.07.25B 010.d | 07/25/2017 15:12 |
| TP-PFC-019-TPE RE | 320-29732-3 RE | 2017.07.25B 011.d | 07/25/2017 15:19 |

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab File ID: 2017.07.23A_002.d Lab Sample ID: MB 320-175097/1-A
 Matrix: Water Date Extracted: 07/20/2017 10:13
 Instrument ID: A8_N Date Analyzed: 07/23/2017 14:39
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|-----------------------|---------------------|------------------------|------------------|
| | LCS 320-175097/2-A | 2017.07.23A 003.d | 07/23/2017 14:46 |
| | LCSD 320-175097/3-A | 2017.07.23A 004.d | 07/23/2017 14:53 |
| TP-PFC-019-TPI | 320-29732-1 | 2017.07.23A 016.d | 07/23/2017 16:16 |
| TP-PFC-019-TPE | 320-29732-3 | 2017.07.23A 018.d | 07/23/2017 16:30 |
| TP-PFC-019-TPI DL | 320-29732-1 DL | 2017.07.24A A 029.d | 07/24/2017 20:07 |
| TP-PFC-019-MID-CARBON | 320-29732-2 | 2017.07.24A A 030.d | 07/24/2017 20:14 |

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab File ID: 2017.07.27C_002.d Lab Sample ID: MB 320-175742/1-A
 Matrix: Water Date Extracted: 07/25/2017 09:12
 Instrument ID: A8_N Date Analyzed: 07/27/2017 20:55
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---------------------|---------------------|----------------------|------------------|
| | LCS 320-175742/2-A | 2017.07.27C 003.d | 07/27/2017 21:02 |
| | LCSD 320-175742/3-A | 2017.07.27C 004.d | 07/27/2017 21:09 |
| TP-PFC-019-TPE-D RE | 320-29732-4 RE | 2017.07.27C 014.d | 07/27/2017 22:18 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPI Lab Sample ID: 320-29732-1
 Matrix: Water Lab File ID: 2017.07.23A_016.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 256.3 (mL) Date Analyzed: 07/23/2017 16:16
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|------|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 77 | M | 2.4 | 0.98 | 0.45 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 180 | | 2.4 | 2.0 | 0.96 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 350 | | 2.4 | 2.0 | 0.77 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 66 | | 2.4 | 2.0 | 0.78 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 1300 | M E | 2.4 | 2.0 | 0.73 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 2.3 | J | 2.4 | 2.0 | 0.64 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1.1 | J | 2.4 | 0.98 | 0.43 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.4 | 2.0 | 0.73 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.4 | 2.0 | 0.57 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 2.0 | U | 2.4 | 2.0 | 0.54 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 52 | | 2.4 | 2.0 | 0.90 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 350 | | 2.4 | 2.0 | 0.85 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 9.0 | | 2.4 | 2.0 | 0.70 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 370 | E | 3.9 | 2.9 | 1.2 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 2.9 | U | 3.9 | 2.9 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 1.1 | J | 39 | 2.0 | 0.62 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPI Lab Sample ID: 320-29732-1
 Matrix: Water Lab File ID: 2017.07.23A_016.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 256.3 (mL) Date Analyzed: 07/23/2017 16:16
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 14 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 77 | | 25-150 |
| STL00993 | 13C2 PFHxA | 71 | | 25-150 |
| STL00990 | 13C4 PFOA | 67 | | 25-150 |
| STL00995 | 13C5 PFNA | 66 | | 25-150 |
| STL00996 | 13C2 PFDA | 65 | | 25-150 |
| STL00997 | 13C2 PFUnA | 48 | | 25-150 |
| STL00998 | 13C2 PFDoA | 45 | | 25-150 |
| STL00994 | 18O2 PFHxS | 87 | | 25-150 |
| STL00991 | 13C4 PFOS | 83 | | 25-150 |
| STL01892 | 13C4-PFHpA | 93 | | 25-150 |
| STL01893 | 13C5 PFPeA | 80 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_016.d
 Lims ID: 320-29732-C-1-A
 Client ID: TP-PFC-019-TPI
 Sample Type: Client
 Inject. Date: 23-Jul-2017 16:16:27 ALS Bottle#: 14 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-29732-c-1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 13:03:07 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 13:00:25

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-------|-----------------|-------|
| 2 Perfluorobutyric acid | 212.90 | > 169.00 | 1.563 | 1.556 | 0.007 | 1.000 | 4198764 | 39.5 | 514 | M |
| D 1 13C4 PFBA | 217.00 | > 172.00 | 1.563 | 1.556 | 0.007 | | 6028469 | 38.6 | 77.3 | 29917 |
| 4 Perfluoropentanoic acid | 262.90 | > 219.00 | 1.773 | 1.775 | -0.002 | 1.000 | 8353125 | 91.2 | | 1747 |
| D 3 13C5-PFPeA | 267.90 | > 223.00 | 1.773 | 1.775 | -0.002 | | 4396468 | 39.8 | 79.6 | 24507 |
| 5 Perfluorobutanesulfonic acid | 298.90 | > 80.00 | 1.800 | 1.802 | -0.002 | 1.000 | 4755935 | 26.7 | | 1281 |
| | 298.90 | > 99.00 | 1.800 | 1.802 | -0.002 | 1.000 | 1849467 | | 2.57(0.00-0.00) | 1132 |
| 6 Perfluorohexanoic acid | 313.00 | > 269.00 | 2.051 | 2.055 | -0.004 | 1.000 | 12241152 | 179.0 | | 5508 |
| D 7 13C2 PFHxA | 315.00 | > 270.00 | 2.051 | 2.055 | -0.004 | | 3590817 | 35.5 | 71.0 | 31043 |
| 10 Perfluoroheptanoic acid | 363.00 | > 319.00 | 2.394 | 2.403 | -0.009 | 1.000 | 2690798 | 33.7 | | 2060 |
| D 9 13C4-PFHpA | 367.00 | > 322.00 | 2.394 | 2.403 | -0.009 | | 3888667 | 46.4 | 92.8 | 28078 |
| 8 Perfluorohexanesulfonic acid | 399.00 | > 80.00 | 2.410 | 2.419 | -0.009 | 1.000 | 23121934 | 178.7 | | 7047 |
| D 11 18O2 PFHxS | 403.00 | > 84.00 | 2.410 | 2.419 | -0.009 | | 5657487 | 41.2 | 87.0 | 38633 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.764 | 2.764 | 0.0 | | 40585 | 50.0 | | 381 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.764 | 2.771 | -0.007 | 1.000 | 40456661 | 685.3 | | 6058 |
| | 413.00 | > 169.00 | 2.764 | 2.771 | -0.007 | 1.000 | 31680912 | | 1.28(0.90-1.10) | 8511 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|------------------|------|-------|-------|
| D 14 13C4 PFOA | | | | | | | | | | |
| 417.00 > 372.00 | 2.764 | 2.771 | -0.007 | | 2766898 | 33.7 | | 67.4 | 19996 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.771 | 2.778 | -0.007 | 1.000 | 466602 | 4.62 | | | 155 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.141 | 3.151 | -0.010 | 1.000 | 18035244 | 189.7 | | | 5956 | E |
| 499.00 > 99.00 | 3.141 | 3.151 | -0.010 | 1.000 | 3997565 | | 4.51(0.90-1.10) | | 21922 | E |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.150 | 3.151 | -0.001 | 1.000 | 52777 | 1.20 | | | 55.6 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.141 | 3.151 | -0.010 | | 4299837 | 39.7 | | 83.1 | 15530 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.150 | 3.151 | -0.001 | | 2167405 | 33.0 | | 65.9 | 20680 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.505 | 3.507 | -0.002 | | 1264535 | 6.92 | | 13.8 | 11258 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.505 | 3.507 | -0.002 | 1.000 | 13182 | 0.5780 | | | 111 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.505 | 3.507 | -0.002 | | 1825788 | 32.7 | | 65.4 | 12479 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.505 | 3.507 | -0.002 | 1.000 | 20512 | 0.5733 | | | 51.6 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.836 | 3.833 | 0.003 | 1.000 | 3618 | 0.0737 | | | 9.4 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.826 | 3.833 | -0.007 | | 983090 | 24.1 | | 48.3 | 6347 | |
| D 36 13C2 PFDoA | | | | | | | | | | |
| 615.00 > 570.00 | 4.123 | 4.123 | 0.0 | | 1007959 | 22.6 | | 45.1 | 3174 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.382 | 4.388 | -0.006 | 1.000 | 1718 | 0.1001 | | | 1.6 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | |
| 712.50 > 668.90 | 4.662 | 4.630 | 0.032 | 1.000 | 44204 | 1.14 | | | 6.3 | M |
| 713.00 > 169.00 | 4.621 | 4.630 | -0.009 | 0.991 | 2394 | | 18.46(0.00-0.00) | | 65.9 | M |

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_016.d

Injection Date: 23-Jul-2017 16:16:27

Instrument ID: A8_N

Lims ID: 320-29732-C-1-A

Lab Sample ID: 320-29732-1

Client ID: TP-PFC-019-TPI

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

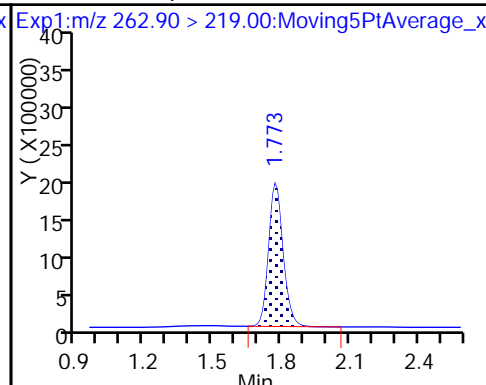
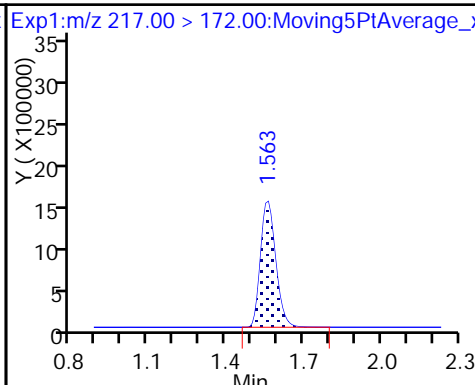
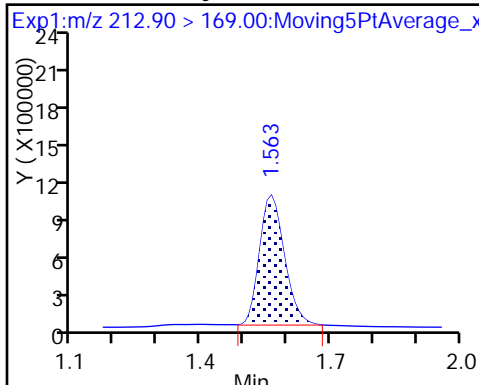
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid (M)

D 1 13C4 PFBA

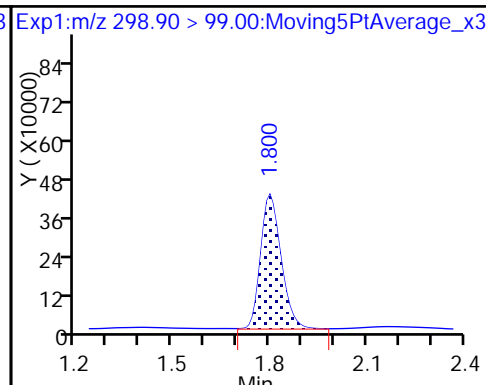
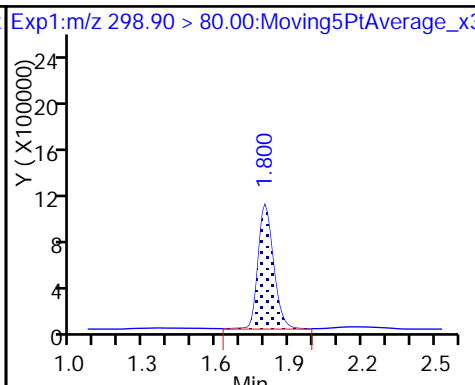
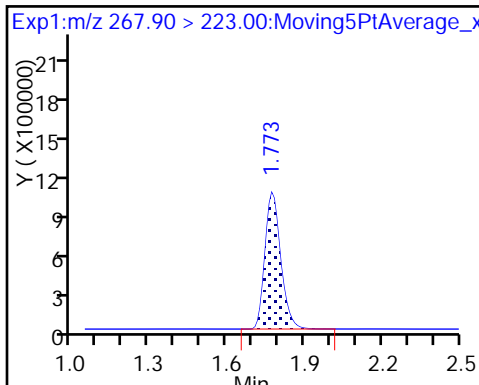
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

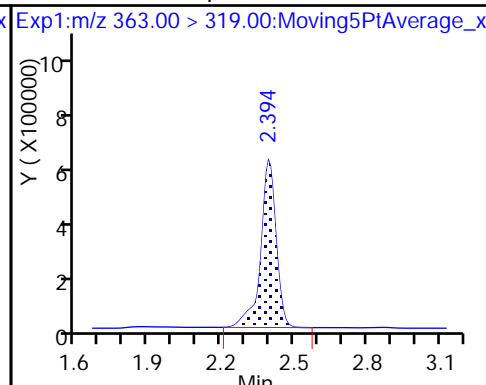
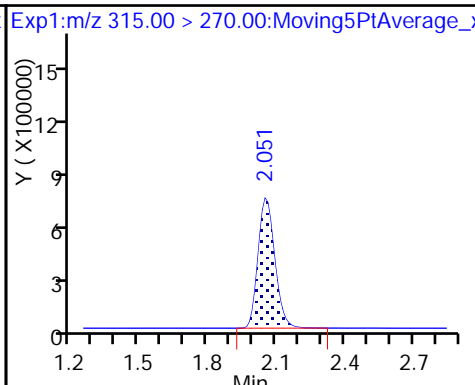
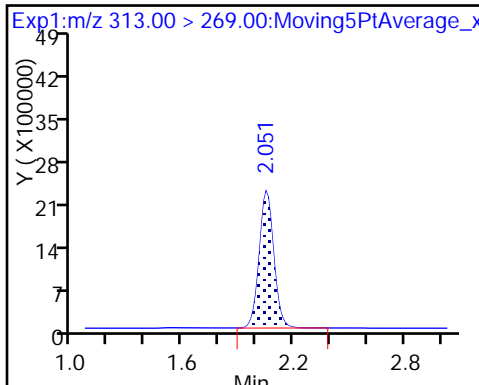
5 Perfluorobutanesulfonic acid



6 Perfluorohexanoic acid

D 7 13C2 PFHxA

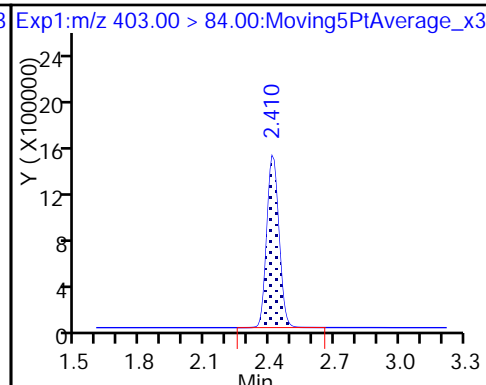
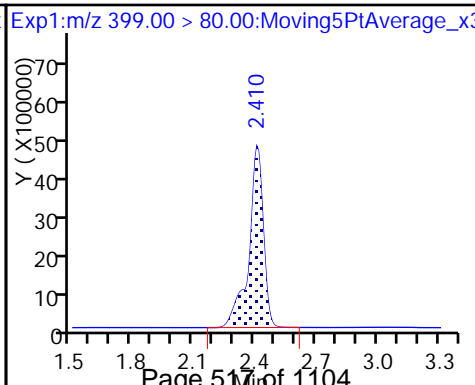
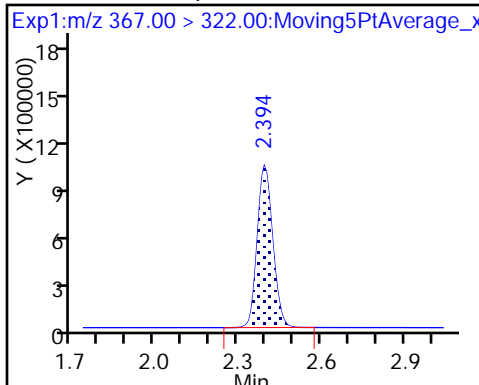
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

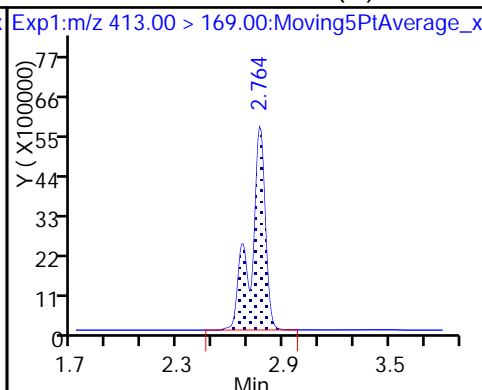
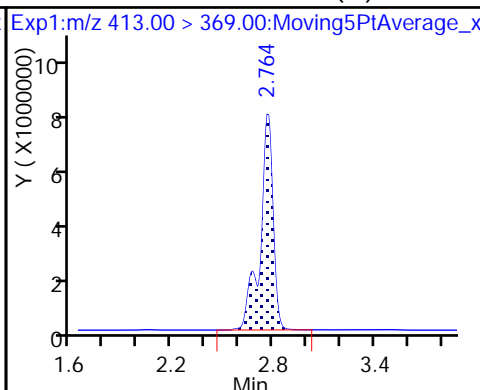
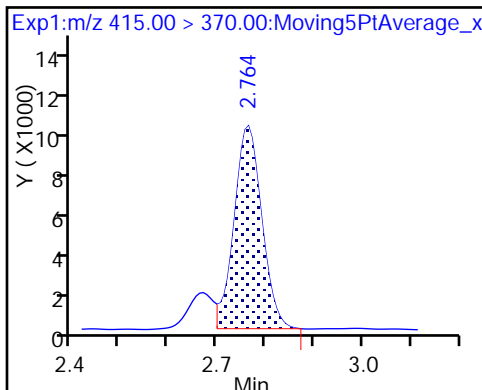
D 11 18O2 PFHxS



* 62 13C2-PFOA

15 Perfluorooctanoic acid (M)

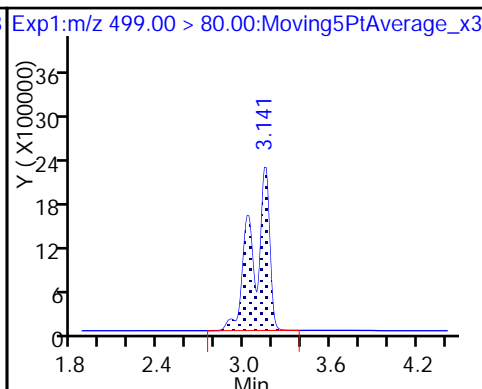
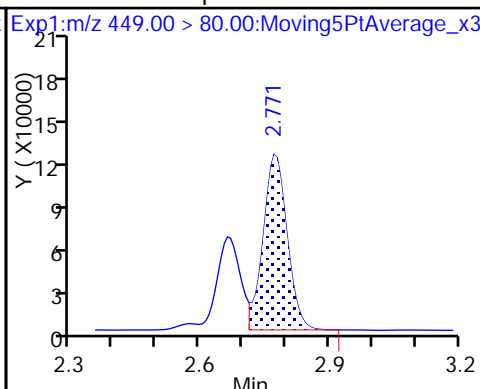
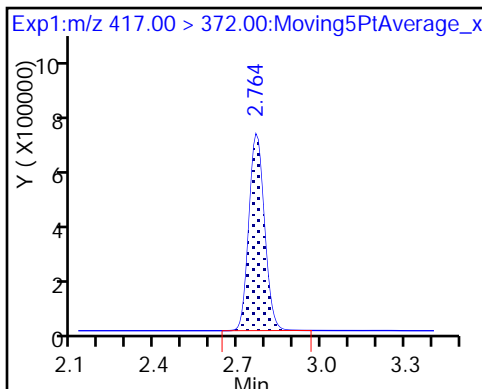
15 Perfluorooctanoic acid (M)



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

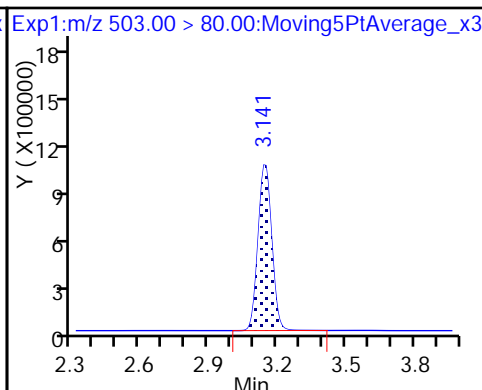
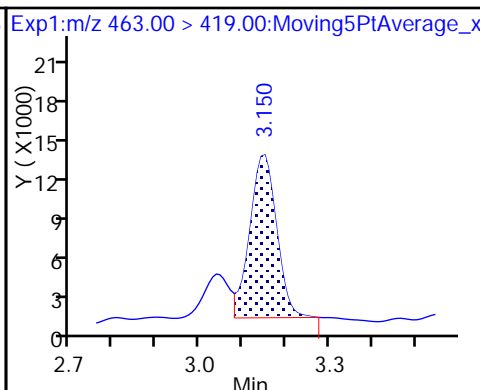
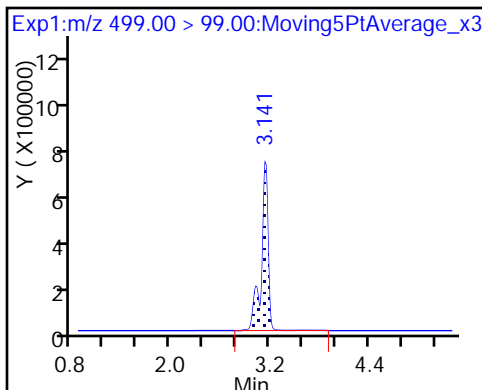
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

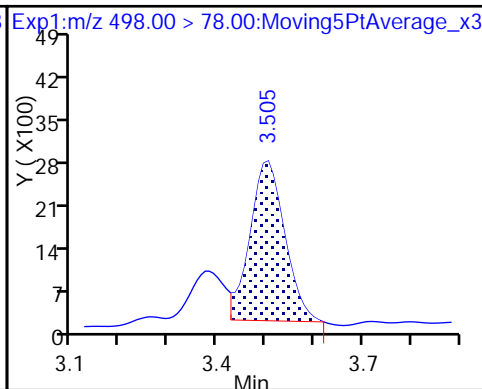
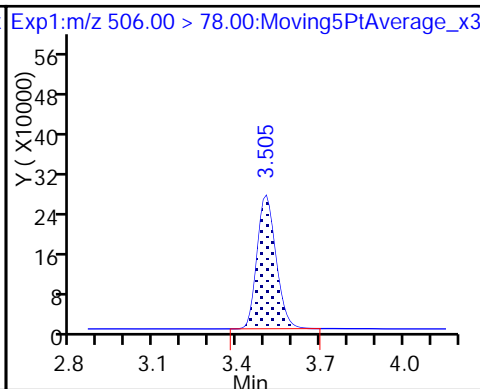
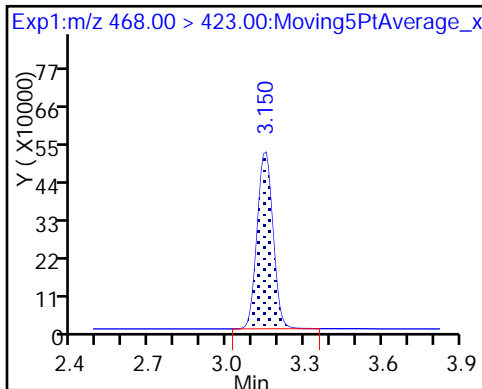
D 18 13C4 PFOS



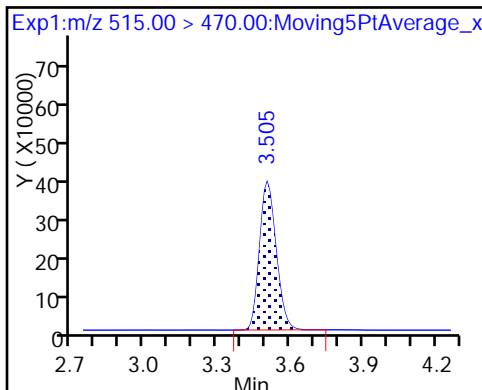
D 19 13C5 PFNA

D 21 13C8 FOSA

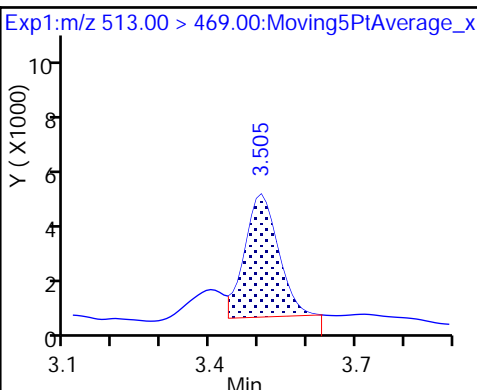
22 Perfluorooctane Sulfonamide



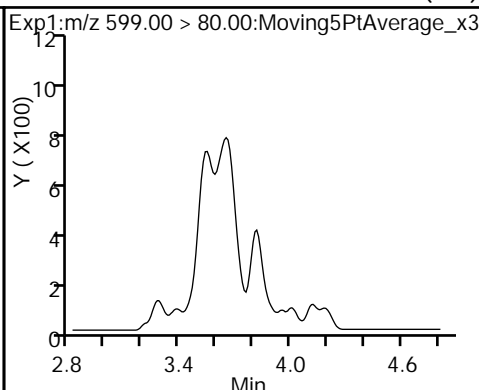
D 23 13C2 PFDA



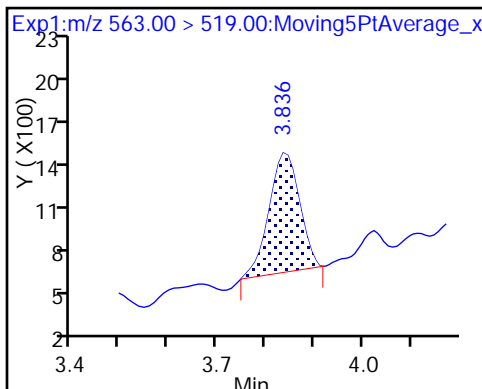
24 Perfluorodecanoic acid



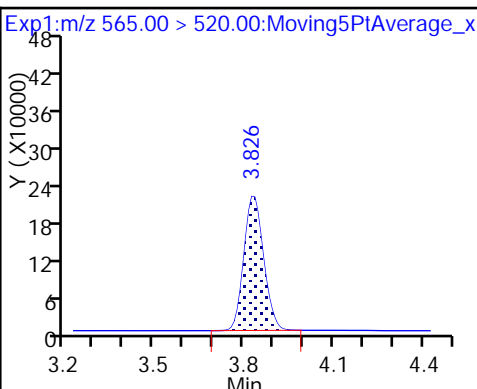
29 Perfluorodecane Sulfonic acid (ND)



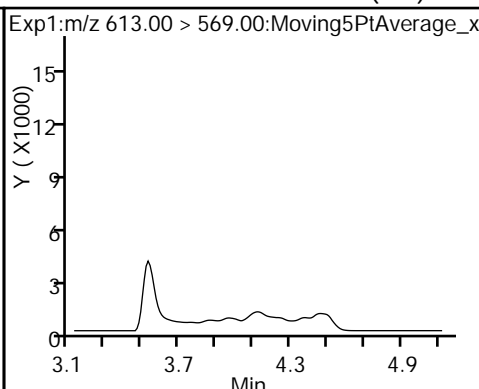
31 Perfluoroundecanoic acid



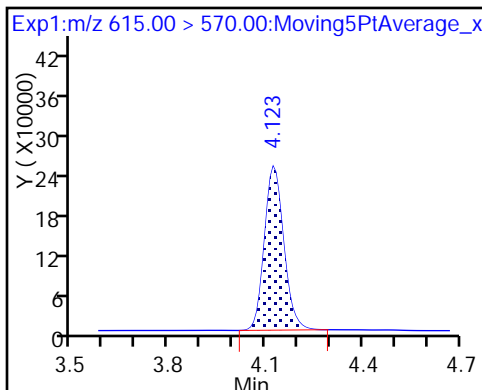
D 30 13C2 PFUnA



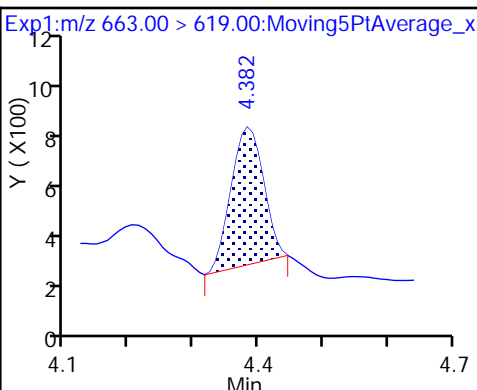
37 Perfluorododecanoic acid (ND)



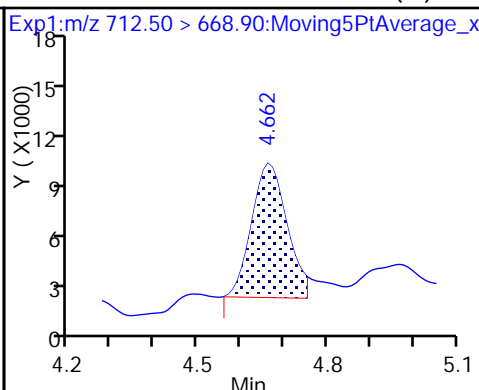
D 36 13C2 PFDoA



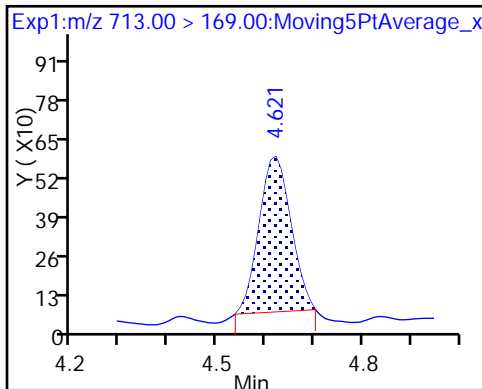
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid (M)



42 Perfluorotetradecanoic acid



TestAmerica Sacramento

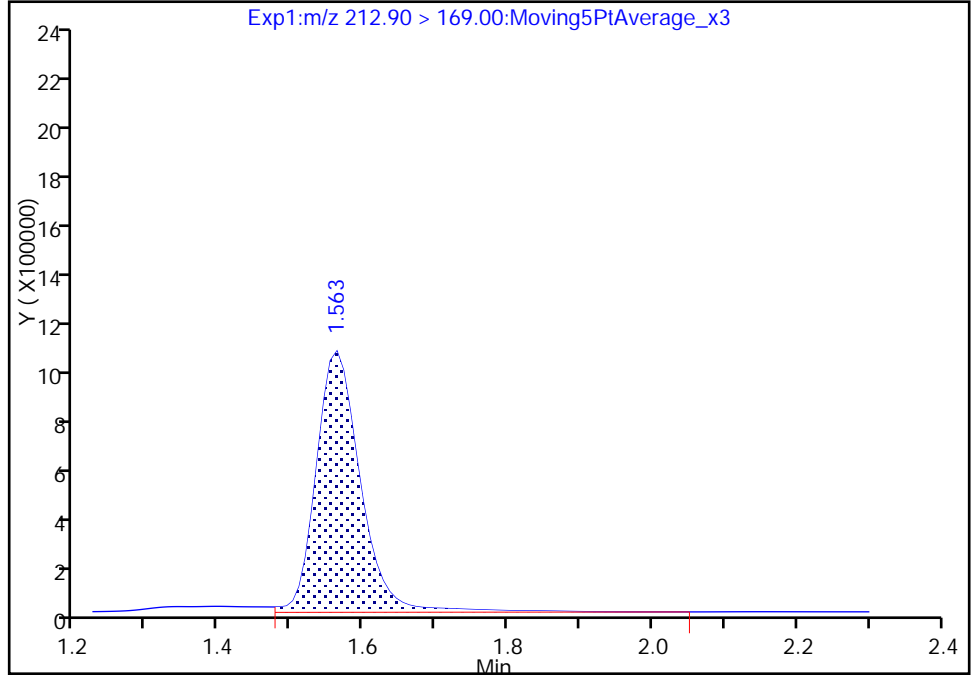
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Injection Date: 23-Jul-2017 16:16:27 Instrument ID: A8_N
Lims ID: 320-29732-C-1-A Lab Sample ID: 320-29732-1
Client ID: TP-PFC-019-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

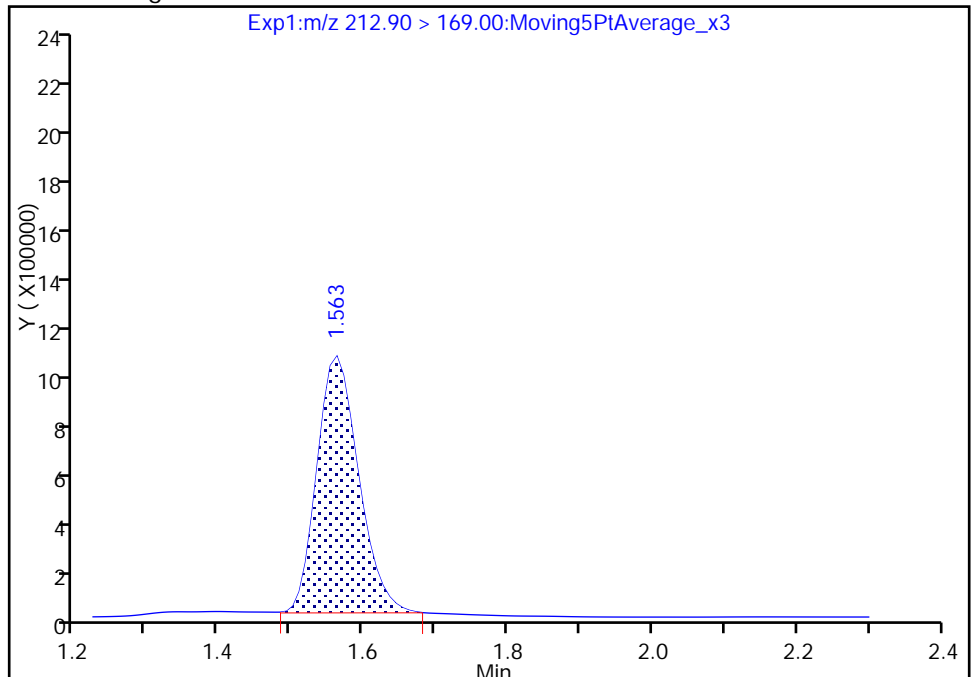
RT: 1.56
Area: 4548929
Amount: 42.775257
Amount Units: ng/ml

Processing Integration Results



RT: 1.56
Area: 4198764
Amount: 39.482526
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 24-Jul-2017 12:59:28

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

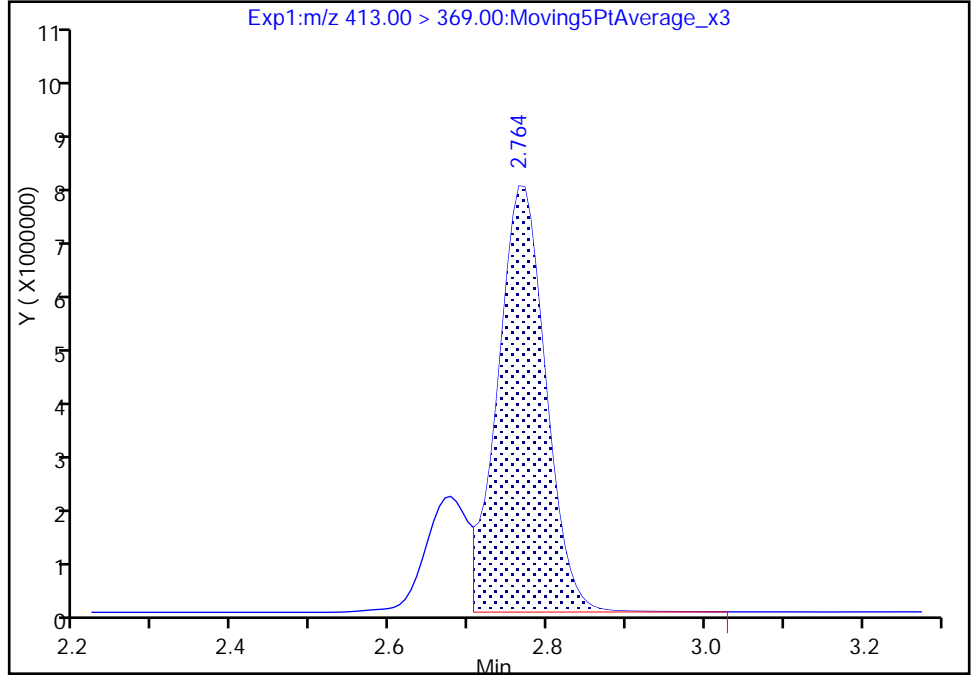
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Lims ID: 320-29732-C-1-A Lab Sample ID: 320-29732-1
Client ID: TP-PFC-019-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

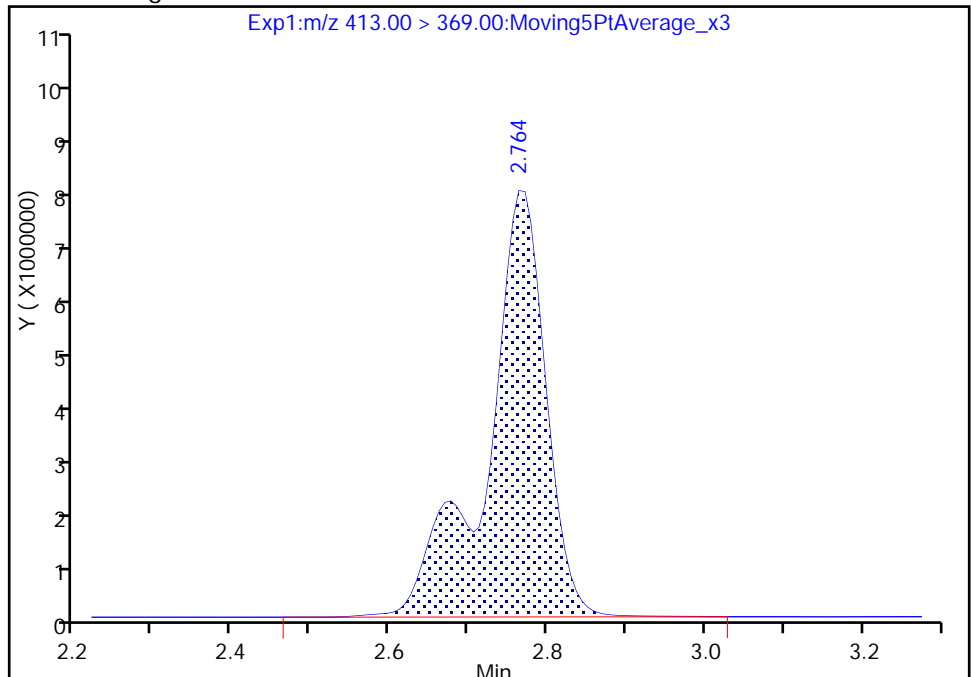
RT: 2.76
Area: 32616078
Amount: 552.5170
Amount Units: ng/ml

Processing Integration Results



RT: 2.76
Area: 40456661
Amount: 685.3366
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 24-Jul-2017 12:59:41

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

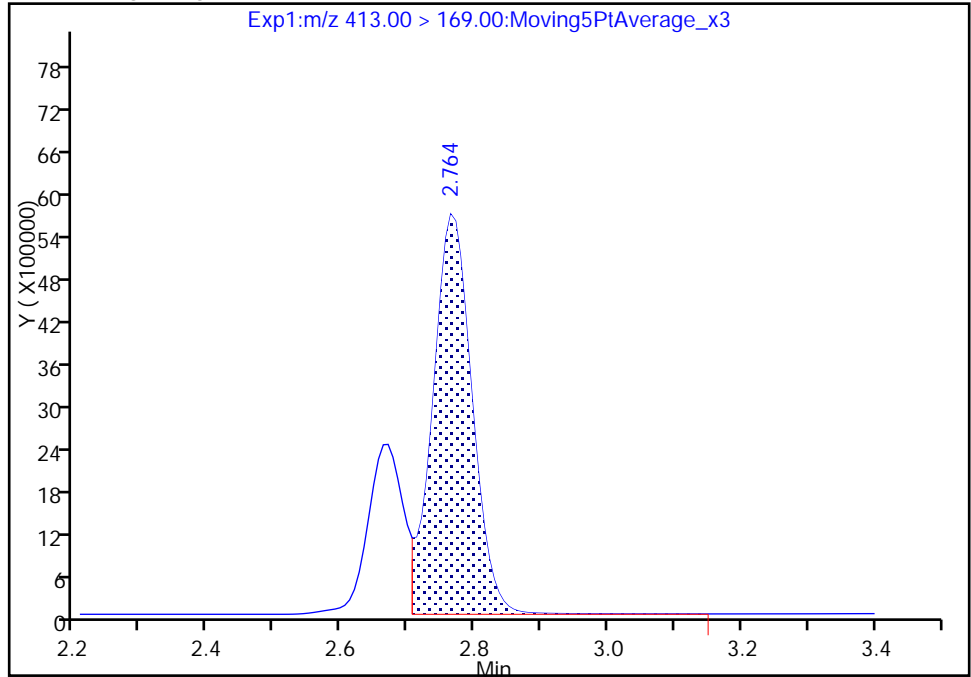
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Injection Date: 23-Jul-2017 16:16:27 Instrument ID: A8_N
Lims ID: 320-29732-C-1-A Lab Sample ID: 320-29732-1
Client ID: TP-PFC-019-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

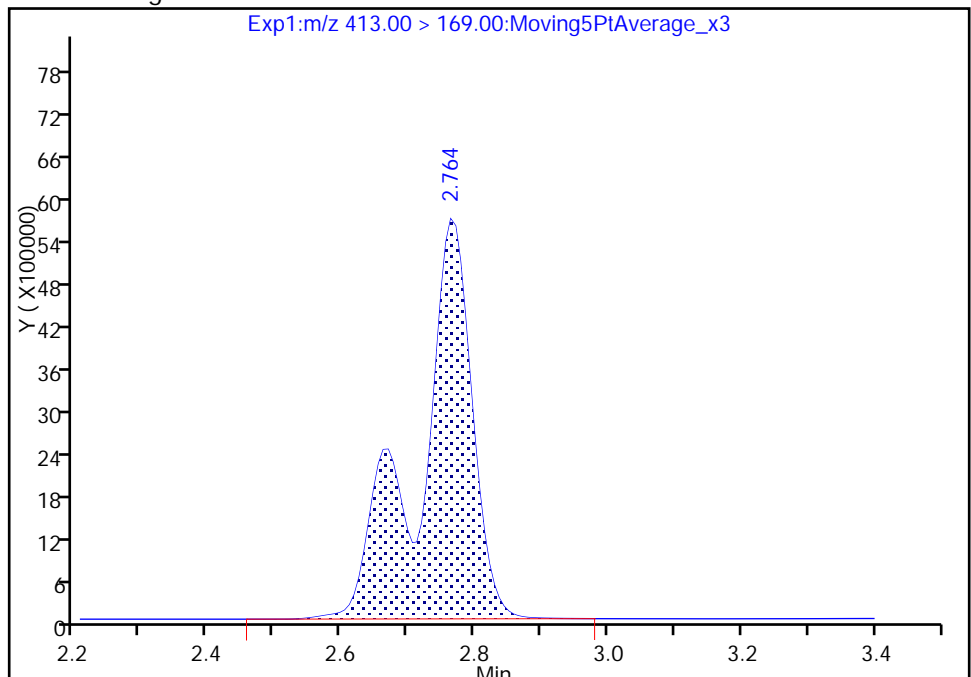
RT: 2.76
Area: 23056054
Amount: 552.5170
Amount Units: ng/ml

Processing Integration Results



RT: 2.76
Area: 31680912
Amount: 685.3366
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPI RE Lab Sample ID: 320-29732-1 RE
 Matrix: Water Lab File ID: 2017.07.25B_009.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11
 Extraction Method: 3535 Date Extracted: 07/20/2017 09:15
 Sample wt/vol: 258 (mL) Date Analyzed: 07/25/2017 15:05
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175951 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|-------------------------------------|--------|-------|-----|------|------|
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 1.6 | J M Q | 2.4 | 0.97 | 0.39 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00998 | 13C2 PFD0A | 67 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_009.d
 Lims ID: 320-29732-A-1-A
 Client ID: TP-PFC-019-TPI
 Sample Type: Client
 Inject. Date: 25-Jul-2017 15:05:59 ALS Bottle#: 8 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-29732-a-1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:28:43

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.554 | 1.559 | -0.005 | 5583417 | 35.8 | | 71.6 | 19239 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.554 | 1.559 | -0.005 | 1.000 | 4384421 | 44.5 | | 684 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.763 | 1.778 | -0.015 | 4153572 | 37.6 | | 75.2 | 19604 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.763 | 1.778 | -0.015 | 1.000 | 8687934 | 100.4 | | 1670 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.791 | 1.806 | -0.015 | 1.000 | 5496715 | 27.8 | | 1589 | |
| | 298.90 > 99.00 | 1.791 | 1.806 | -0.015 | 1.000 | 2158433 | 2.55(0.00-0.00) | | 1278 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.040 | 2.058 | -0.018 | 3951597 | 39.1 | | 78.1 | 24528 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.040 | 2.058 | -0.018 | 1.000 | 13329443 | 177.1 | | 5839 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.372 | 2.393 | -0.021 | 3929293 | 46.9 | | 93.8 | 22199 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.372 | 2.393 | -0.021 | 1.000 | 2836560 | 35.2 | | 1719 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.388 | 2.409 | -0.021 | 6280772 | 45.7 | | 96.6 | 25767 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.388 | 2.409 | -0.021 | 1.000 | 26143625 | 182.0 | | 7568 | |
| D 14 13C4 PFOA | 417.00 > 372.00 | 2.734 | 2.756 | -0.022 | 2709791 | 33.0 | | 66.0 | 17268 | |
| * 62 13C2-PFOA | 415.00 > 370.00 | 2.727 | 2.756 | -0.029 | 43315 | 50.0 | | | 349 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|------------------|------|-------|-------|
| 15 Perfluorooctanoic acid | | | | | | | | | | E |
| 413.00 > 369.00 | 2.734 | 2.756 | -0.022 | 1.000 | 32891176 | 568.9 | | | 325 | E |
| 413.00 > 169.00 | 2.734 | 2.756 | -0.022 | 1.000 | 21453369 | | 1.53(0.90-1.10) | | 218 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.742 | 2.763 | -0.021 | 1.000 | 541951 | 4.91 | | | 158 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | E |
| 499.00 > 80.00 | 3.109 | 3.131 | -0.022 | 1.000 | 19655204 | 188.9 | | | 6549 | E |
| 499.00 > 99.00 | 3.109 | 3.131 | -0.022 | 1.000 | 4391465 | | 4.48(0.90-1.10) | | 6575 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.109 | 3.131 | -0.022 | | 1901732 | 28.9 | | 57.9 | 12968 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.109 | 3.131 | -0.022 | | 4704278 | 43.5 | | 91.0 | 12847 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.109 | 3.140 | -0.031 | 1.000 | 52185 | 1.35 | | | 56.4 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.466 | 3.487 | -0.021 | | 484386 | 2.65 | | 5.3 | 5360 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.466 | 3.497 | -0.031 | | 1878910 | 33.7 | | 67.3 | 11006 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.475 | 3.497 | -0.022 | 1.000 | 21788 | 0.5917 | | | 66.9 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.803 | 3.822 | -0.019 | 1.000 | 4973 | 0.0662 | | | 9.6 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.793 | 3.822 | -0.029 | | 1409672 | 34.6 | | 69.2 | 6399 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.099 | 4.116 | -0.017 | 1.000 | 1772 | 0.0633 | | | 5.0 | |
| D 36 13C2 PFDaA | | | | | | | | | | |
| 615.00 > 570.00 | 4.099 | 4.116 | -0.017 | | 1505668 | 33.7 | | 67.4 | 4397 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | M |
| 712.50 > 668.90 | 4.642 | 4.614 | 0.028 | 1.000 | 48462 | 0.8373 | | | 4.9 | M |
| 713.00 > 169.00 | 4.601 | 4.614 | -0.013 | 0.991 | 2741 | | 17.68(0.00-0.00) | | 68.2 | |

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_009.d

Injection Date: 25-Jul-2017 15:05:59

Instrument ID: A8_N

Lims ID: 320-29732-A-1-A

Lab Sample ID: 320-29732-1

Client ID: TP-PFC-019-TPI

Operator ID: SACINSTLCMS01

ALS Bottle#: 8

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

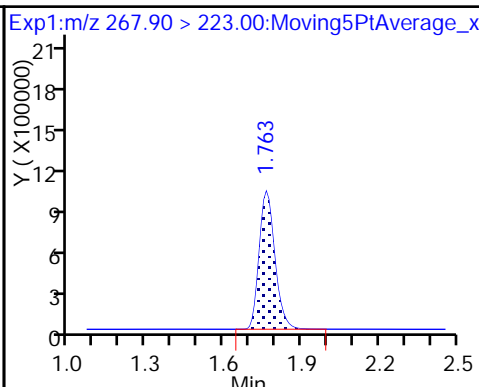
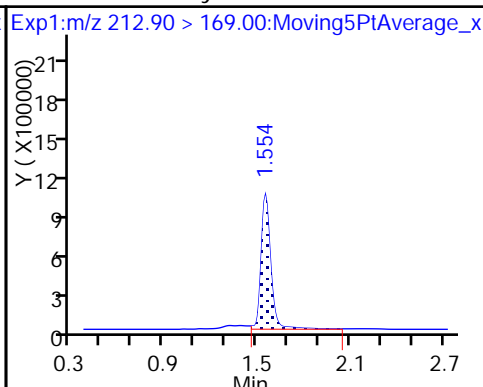
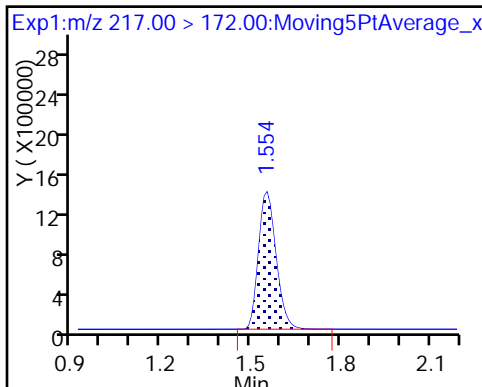
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

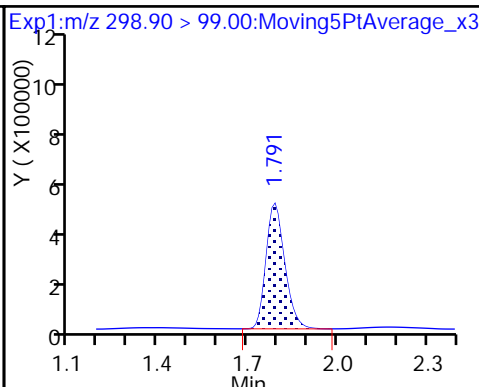
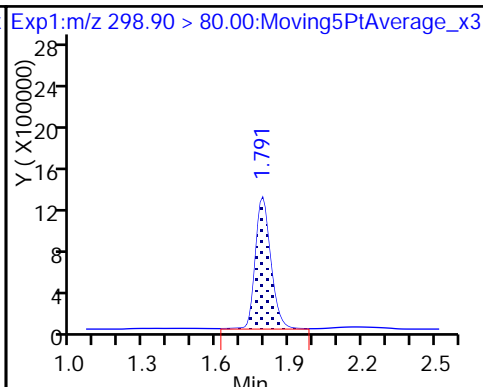
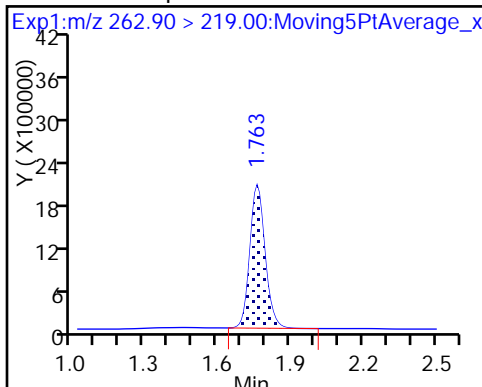
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

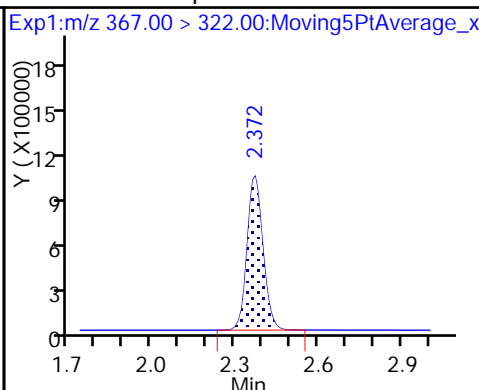
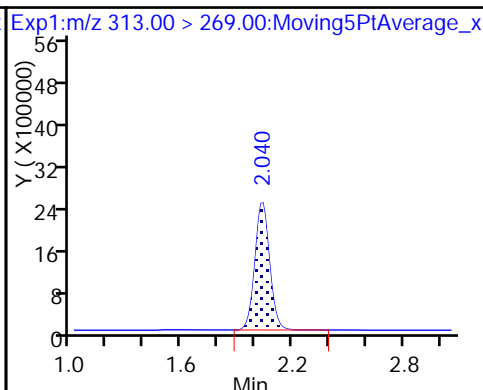
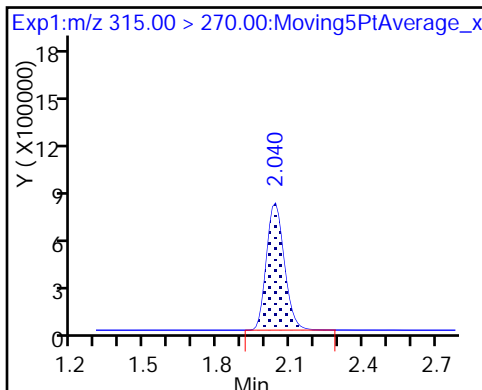
5 Perfluorobutanesulfonic acid



D 7 13C2 PFHxA

6 Perfluorohexanoic acid

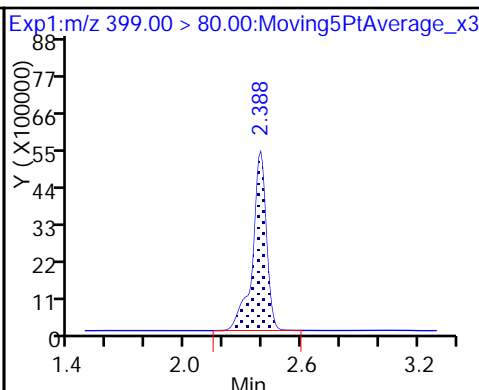
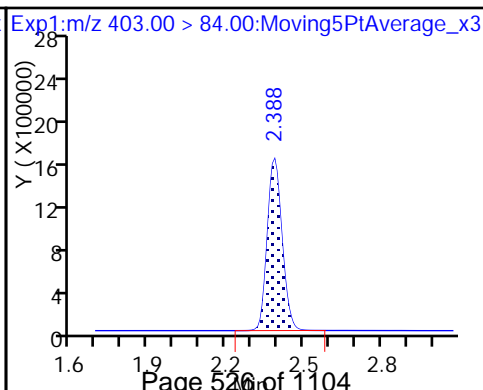
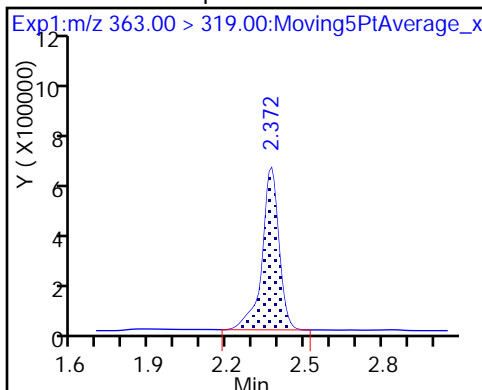
D 9 13C4-PFHpA



10 Perfluoroheptanoic acid

D 11 18O2 PFHxS

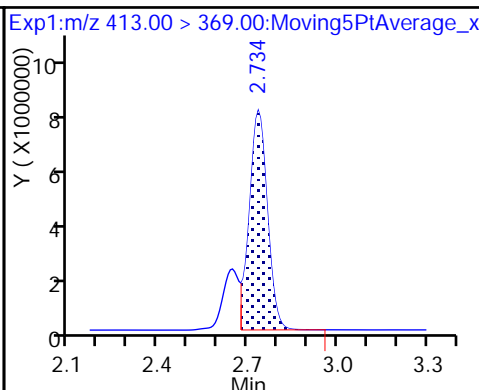
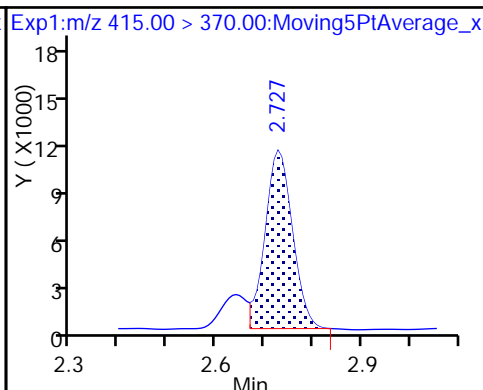
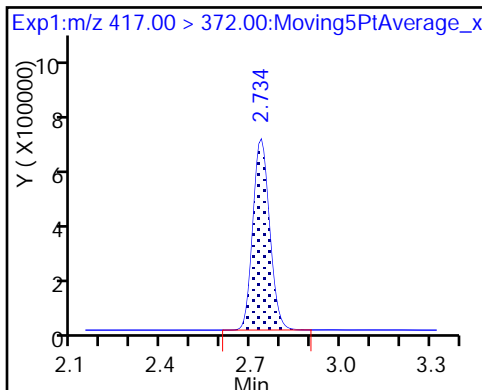
8 Perfluorohexanesulfonic acid



D 14 13C4 PFOA

* 62 13C2-PFOA

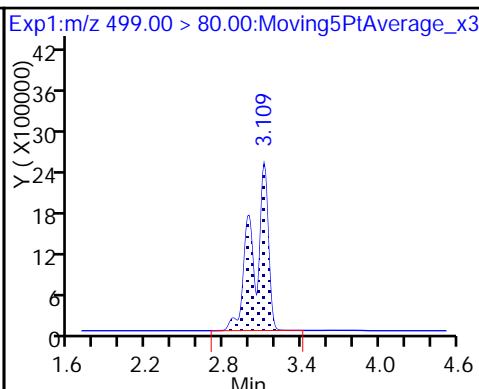
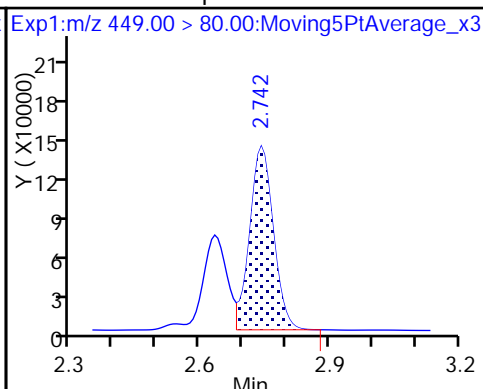
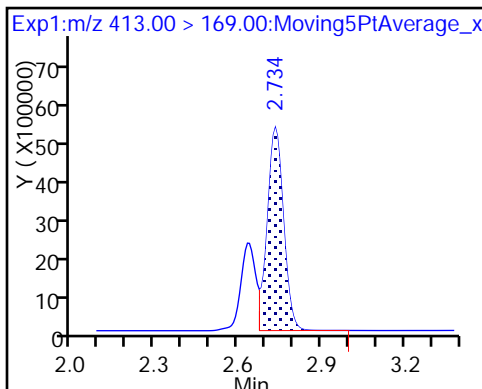
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

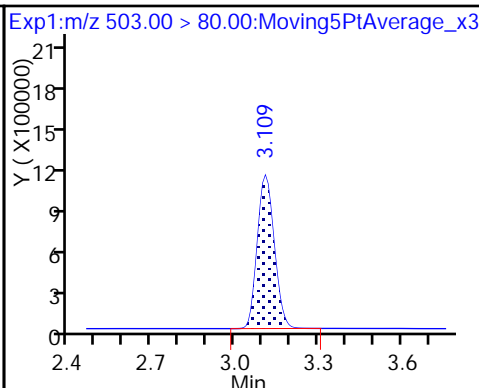
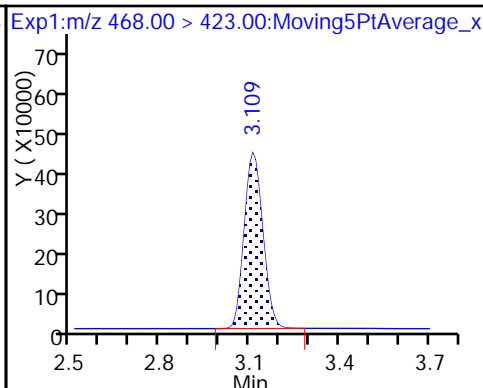
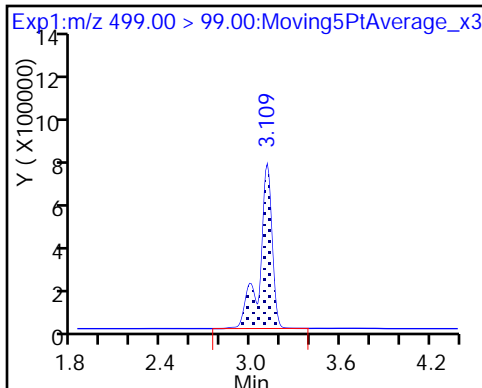
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

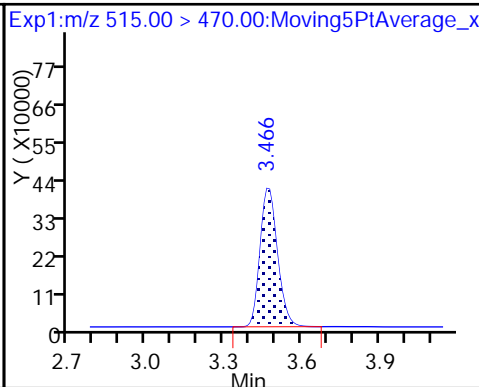
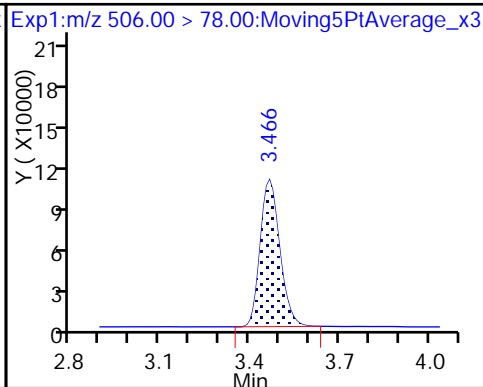
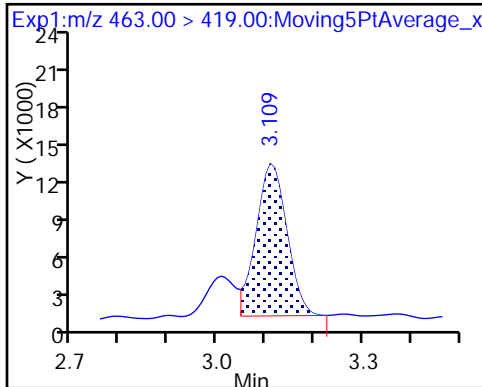
D 18 13C4 PFOS



20 Perfluorononanoic acid

D 21 13C8 FOSA

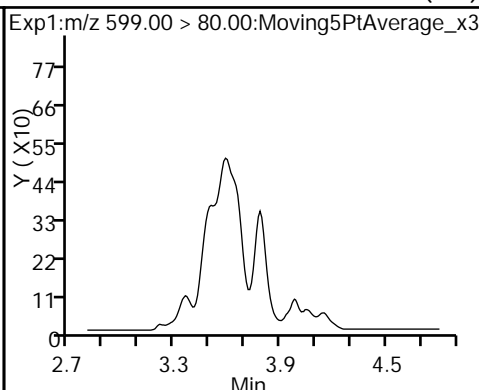
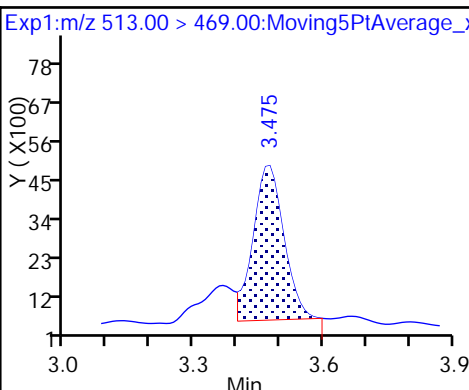
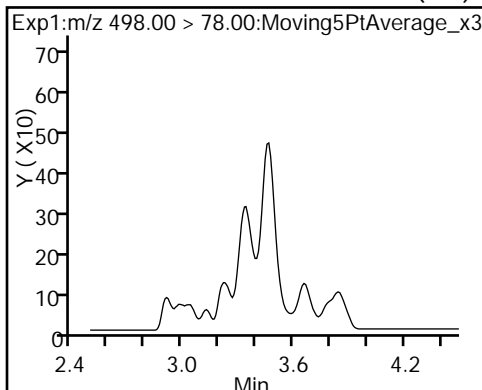
D 23 13C2 PFDA



22 Perfluorooctane Sulfonamide (ND)

24 Perfluorodecanoic acid

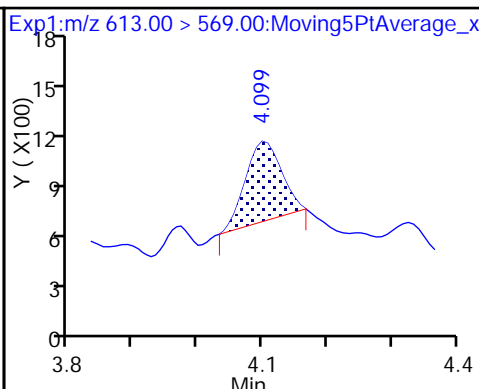
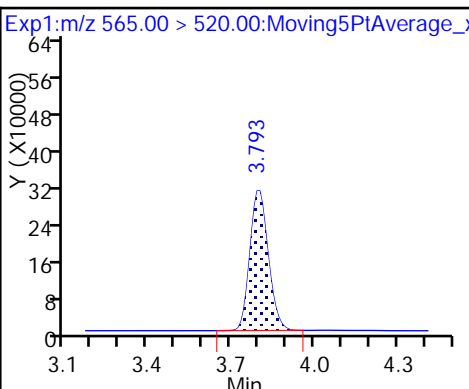
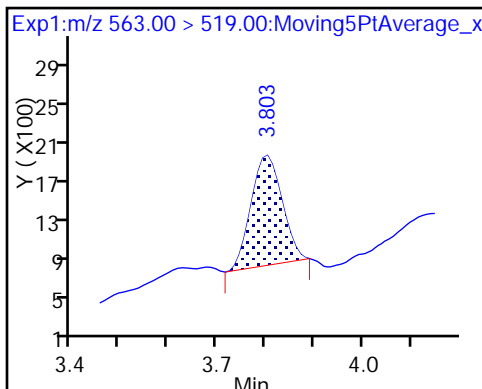
29 Perfluorodecane Sulfonic acid (ND)



31 Perfluoroundecanoic acid

D 30 13C2 PFUa

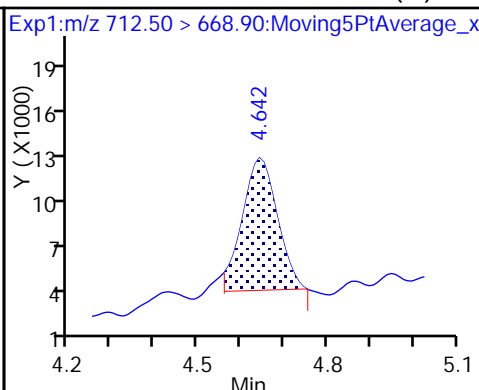
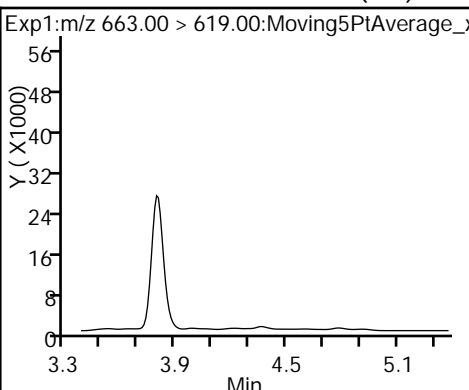
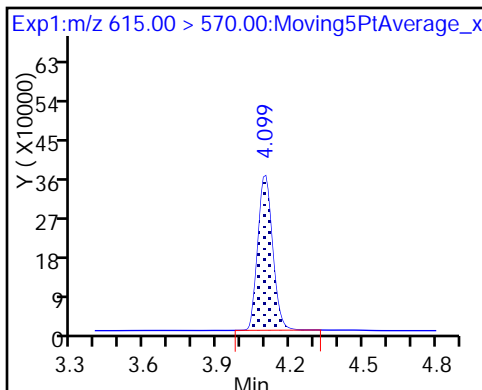
37 Perfluorododecanoic acid



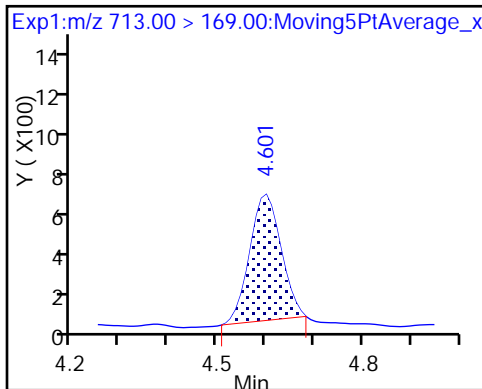
D 36 13C2 PFDa

41 Perfluorotridecanoic acid (ND)

42 Perfluorotetradecanoic acid (M)



42 Perfluorotetradecanoic acid



TestAmerica Sacramento

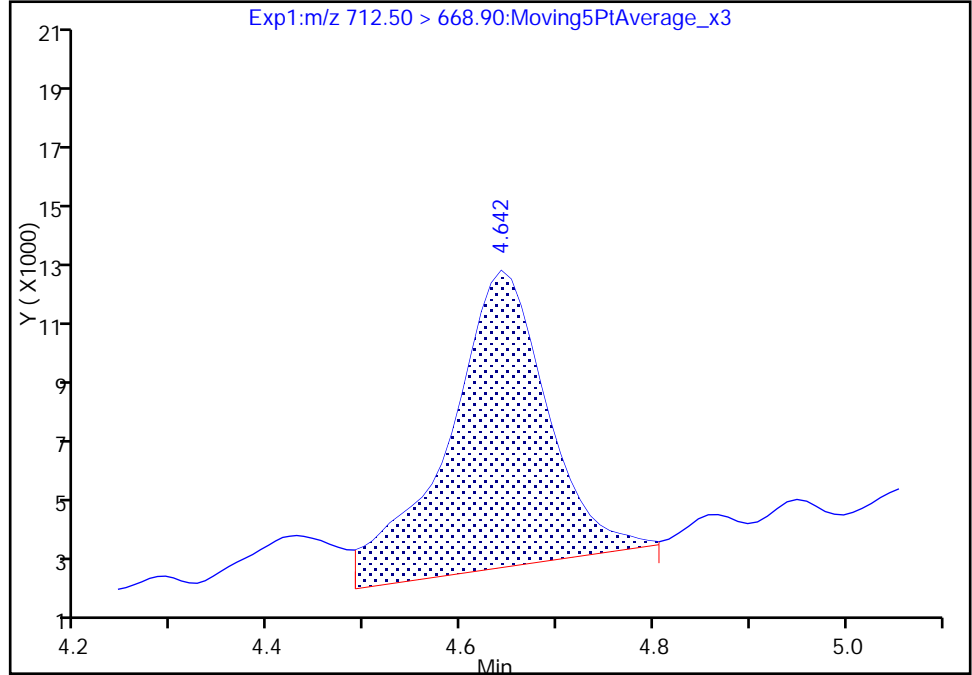
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_009.d
Injection Date: 25-Jul-2017 15:05:59 Instrument ID: A8_N
Lims ID: 320-29732-A-1-A Lab Sample ID: 320-29732-1
Client ID: TP-PFC-019-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 8 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

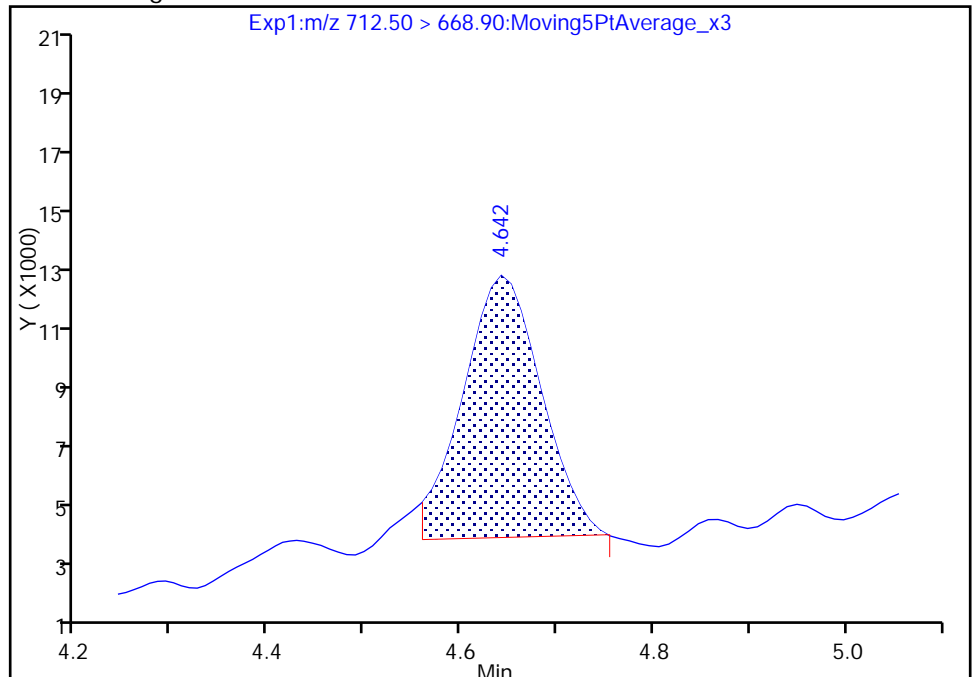
RT: 4.64
Area: 70397
Amount: 1.216276
Amount Units: ng/ml

Processing Integration Results



RT: 4.64
Area: 48462
Amount: 0.837297
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPI DL Lab Sample ID: 320-29732-1 DL
 Matrix: Water Lab File ID: 2017.07.24AA_029.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 256.3 (mL) Date Analyzed: 07/24/2017 20:07
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 10
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175757 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|-----|-----|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 80 | D | 24 | 9.8 | 4.5 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 190 | D | 24 | 20 | 9.6 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 350 | D | 24 | 20 | 7.7 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 70 | D | 24 | 20 | 7.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 1500 | D M | 24 | 20 | 7.3 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 6.4 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 4.8 | J D | 24 | 9.8 | 4.3 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 20 | U | 24 | 20 | 7.3 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 20 | U | 24 | 20 | 5.7 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 5.6 | J D | 24 | 20 | 5.4 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 55 | D | 24 | 20 | 9.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 360 | D | 24 | 20 | 8.5 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 12 | J D | 24 | 20 | 7.0 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 360 | D | 39 | 29 | 12 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 29 | U | 39 | 29 | 12 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 18 | J D | 390 | 20 | 6.2 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPI DL Lab Sample ID: 320-29732-1 DL
 Matrix: Water Lab File ID: 2017.07.24AA_029.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 256.3 (mL) Date Analyzed: 07/24/2017 20:07
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 10
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175757 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 15 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 98 | | 25-150 |
| STL00993 | 13C2 PFHxA | 94 | | 25-150 |
| STL00990 | 13C4 PFOA | 88 | | 25-150 |
| STL00995 | 13C5 PFNA | 77 | | 25-150 |
| STL00996 | 13C2 PFDA | 62 | | 25-150 |
| STL00997 | 13C2 PFUnA | 54 | | 25-150 |
| STL00998 | 13C2 PFDoA | 47 | | 25-150 |
| STL00994 | 18O2 PFHxS | 96 | | 25-150 |
| STL00991 | 13C4 PFOS | 82 | | 25-150 |
| STL01892 | 13C4-PFHpA | 105 | | 25-150 |
| STL01893 | 13C5 PFPeA | 95 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_029.d
 Lims ID: 320-29732-C-1-A
 Client ID: TP-PFC-019-TPI
 Sample Type: Client
 Inject. Date: 24-Jul-2017 20:07:48 ALS Bottle#: 21 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 10.0000
 Sample Info: 320-29732-c-1-a 10X
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 25-Jul-2017 11:29:47 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 11:27:51

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | | | | | | | | | | |
| 212.90 > 169.00 | 1.556 | 1.547 | 0.009 | 1.000 | 547520 | 4.08 | | | 226 | |
| D 1 13C4 PFBA | | | | | | | | | | |
| 217.00 > 172.00 | 1.556 | 1.547 | 0.009 | | 760862 | 4.88 | | 9.8 | 7568 | |
| 4 Perfluoropentanoic acid | | | | | | | | | | |
| 262.90 > 219.00 | 1.766 | 1.756 | 0.010 | 1.000 | 1086642 | 9.91 | | | 574 | |
| D 3 13C5-PFPeA | | | | | | | | | | |
| 267.90 > 223.00 | 1.766 | 1.756 | 0.010 | | 525883 | 4.76 | | 9.5 | 10402 | |
| 5 Perfluorobutanesulfonic acid | | | | | | | | | | |
| 298.90 > 80.00 | 1.793 | 1.784 | 0.009 | 1.000 | 554719 | 2.82 | | | 346 | |
| 298.90 > 99.00 | 1.784 | 1.784 | 0.0 | 0.995 | 222940 | | 2.49(0.00-0.00) | | 318 | |
| 6 Perfluorohexanoic acid | | | | | | | | | | |
| 313.00 > 269.00 | 2.032 | 2.032 | 0.0 | 1.000 | 1614537 | 17.8 | | | 2779 | |
| D 7 13C2 PFHxA | | | | | | | | | | |
| 315.00 > 270.00 | 2.032 | 2.032 | 0.0 | | 477398 | 4.72 | | 9.4 | 11834 | |
| 10 Perfluoroheptanoic acid | | | | | | | | | | |
| 363.00 > 319.00 | 2.375 | 2.366 | 0.009 | 1.000 | 324104 | 3.57 | | | 708 | |
| D 9 13C4-PFHpA | | | | | | | | | | |
| 367.00 > 322.00 | 2.375 | 2.366 | 0.009 | | 441714 | 5.27 | | 10.5 | 12586 | |
| 8 Perfluorohexanesulfonic acid | | | | | | | | | | |
| 399.00 > 80.00 | 2.391 | 2.382 | 0.009 | 1.000 | 2643650 | 18.5 | | | 2210 | |
| D 11 18O2 PFHxS | | | | | | | | | | |
| 403.00 > 84.00 | 2.383 | 2.382 | 0.001 | | 624754 | 4.55 | | 9.6 | 16027 | |
| * 62 13C2-PFOA | | | | | | | | | | |
| 415.00 > 370.00 | 2.735 | 2.725 | 0.010 | | 12685 | 50.0 | | | 354 | |
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.735 | 2.733 | 0.002 | 1.000 | 5991551 | 77.9 | | | 1993 | M |
| 413.00 > 169.00 | 2.735 | 2.733 | 0.002 | 1.000 | 3754663 | | 1.60(0.90-1.10) | | 12098 | M |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|------------------|------|------|-------|
| D 14 13C4 PFOA | | | | | | | | | | |
| 417.00 > 372.00 | 2.735 | 2.733 | 0.002 | | 360631 | 4.39 | | 8.8 | 9723 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.742 | 2.740 | 0.002 | 1.000 | 60564 | 0.6049 | | | 195 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.115 | 3.108 | 0.007 | 1.000 | 1727470 | 18.3 | | | 6890 | |
| 499.00 > 99.00 | 3.115 | 3.108 | 0.007 | 1.000 | 380229 | | 4.54(0.90-1.10) | | 2262 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.115 | 3.108 | 0.007 | 1.000 | 16315 | 0.3151 | | | 35.5 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.115 | 3.108 | 0.007 | | 254288 | 3.87 | | 7.7 | 5060 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.115 | 3.108 | 0.007 | | 426674 | 3.94 | | 8.2 | 8521 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.473 | 3.457 | 0.016 | 1.000 | 22254 | 0.9087 | | | 238 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.473 | 3.457 | 0.016 | | 135773 | 0.7427 | | 1.5 | 1415 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.482 | 3.467 | 0.015 | 1.000 | 8273 | 0.2447 | | | 43.9 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.482 | 3.467 | 0.015 | | 172546 | 3.09 | | 6.2 | 2087 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.795 | 3.778 | 0.017 | 1.000 | 9113 | 0.1640 | | | 306 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.812 | 3.797 | 0.015 | 1.000 | 5697 | 0.1464 | | | 9.0 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.812 | 3.797 | 0.015 | | 110145 | 2.70 | | 5.4 | 1266 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.108 | 4.095 | 0.013 | 1.000 | 4865 | 0.2515 | | | 16.3 | |
| D 36 13C2 PFDaA | | | | | | | | | | |
| 615.00 > 570.00 | 4.108 | 4.095 | 0.013 | | 104109 | 2.33 | | 4.7 | 330 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.376 | 4.358 | 0.018 | 1.000 | 5052 | 0.2850 | | | 12.3 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | |
| 712.50 > 668.90 | 4.633 | 4.596 | 0.037 | 1.000 | 27339 | 0.6831 | | | 7.1 | M |
| 713.00 > 169.00 | 4.612 | 4.596 | 0.016 | 0.996 | 2016 | | 13.56(0.00-0.00) | | 92.0 | M |

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_029.d

Injection Date: 24-Jul-2017 20:07:48

Instrument ID: A8_N

Lims ID: 320-29732-C-1-A

Lab Sample ID: 320-29732-1

Client ID: TP-PFC-019-TPI

Operator ID: SACINSTLCMS01

ALS Bottle#: 21 Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 10.0000

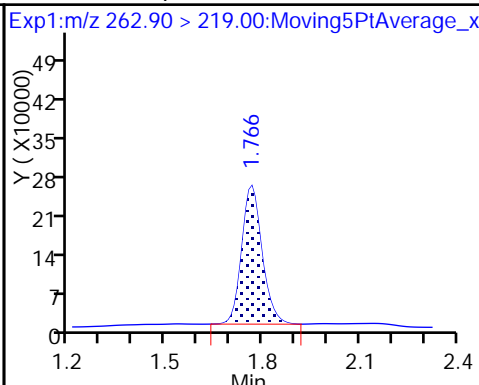
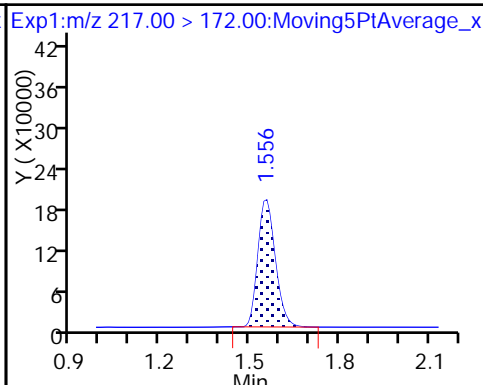
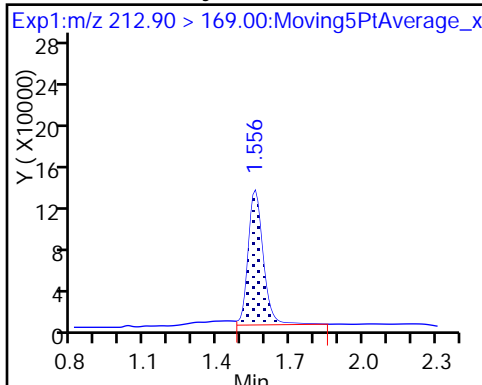
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

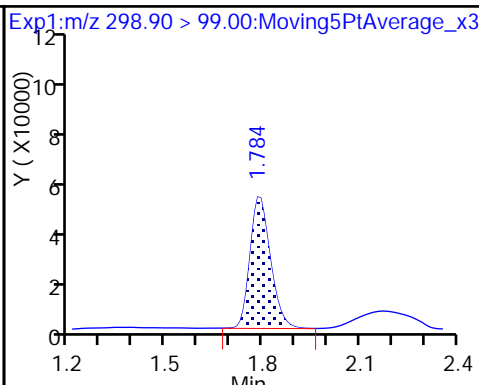
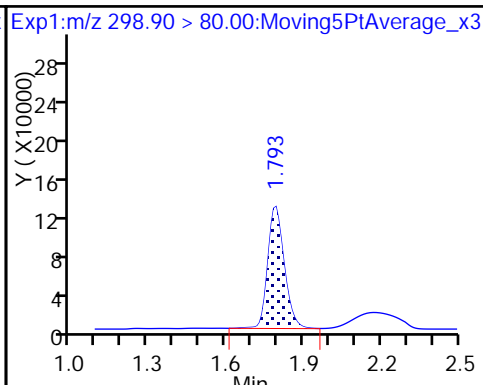
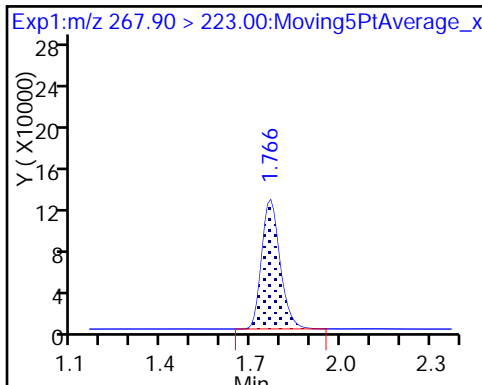
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

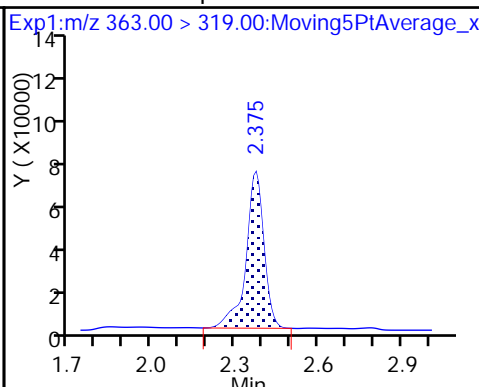
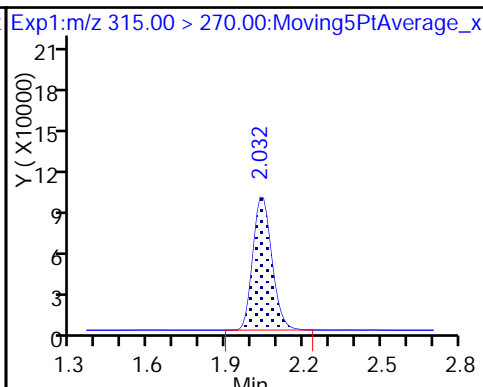
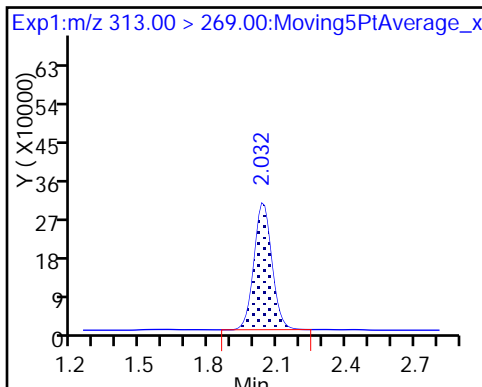
5 Perfluorobutanesulfonic acid



6 Perfluorohexanoic acid

D 7 13C2 PFHxA

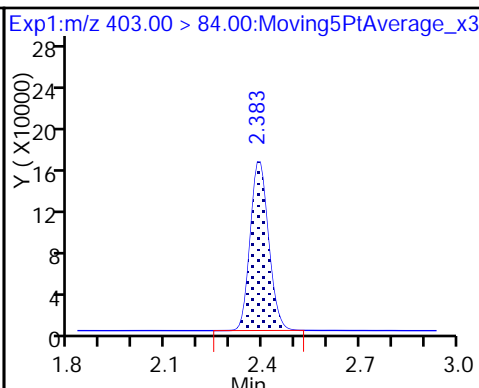
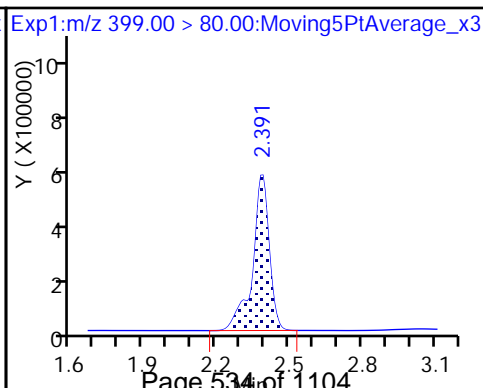
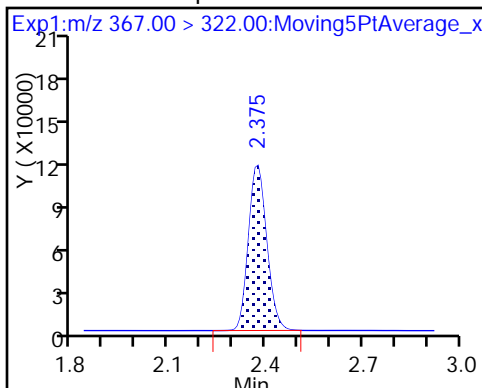
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

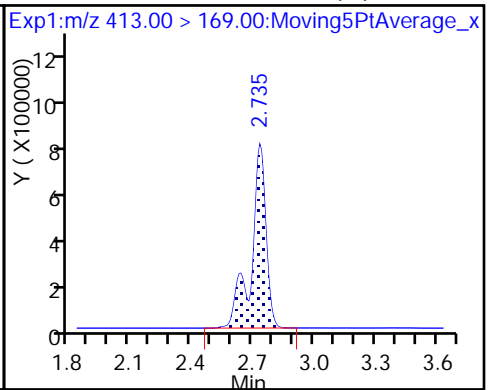
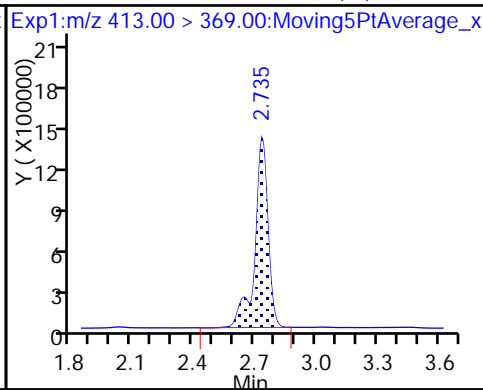
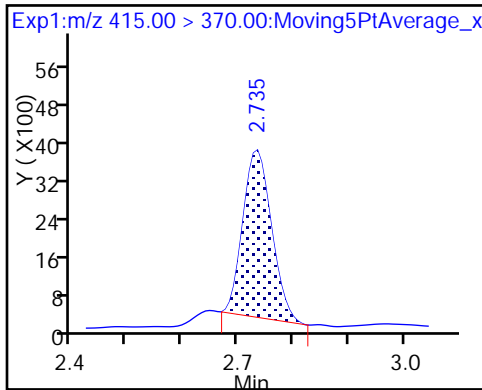
D 11 18O2 PFHxS



* 62 13C2-PFOA

15 Perfluorooctanoic acid (M)

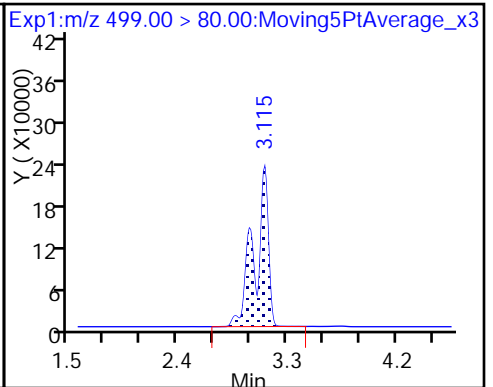
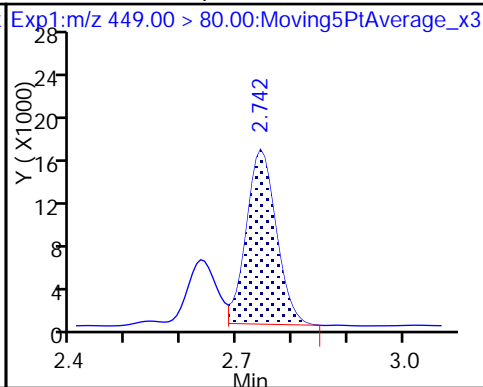
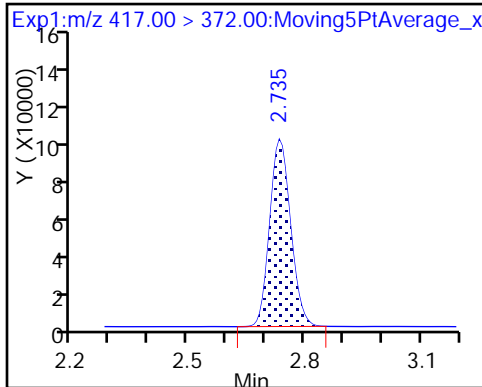
15 Perfluorooctanoic acid (M)



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

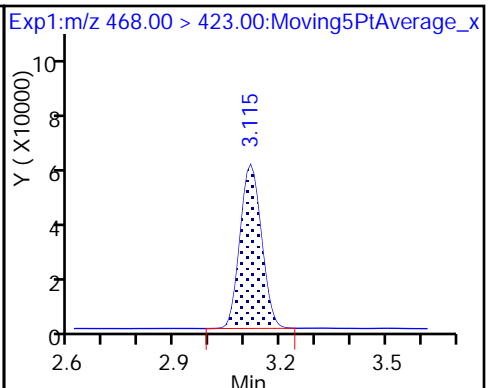
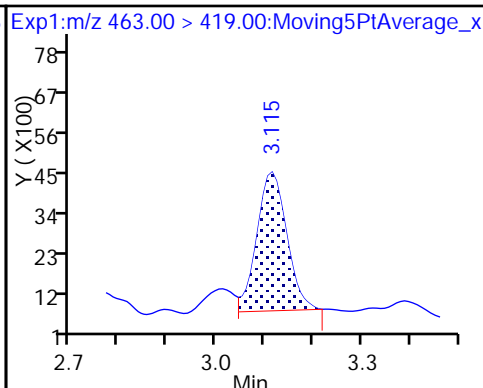
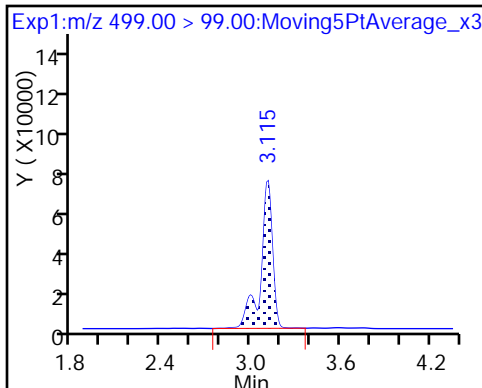
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

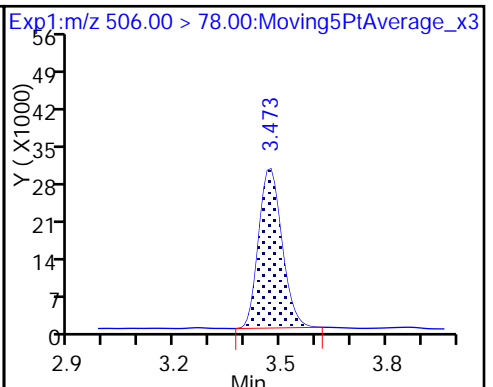
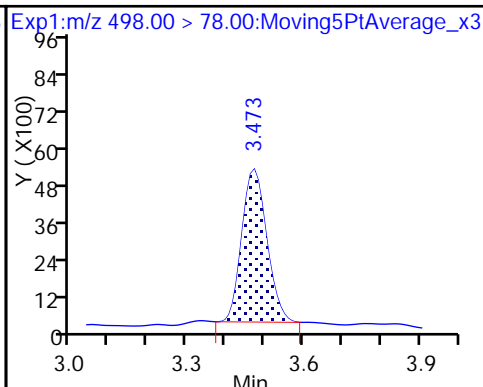
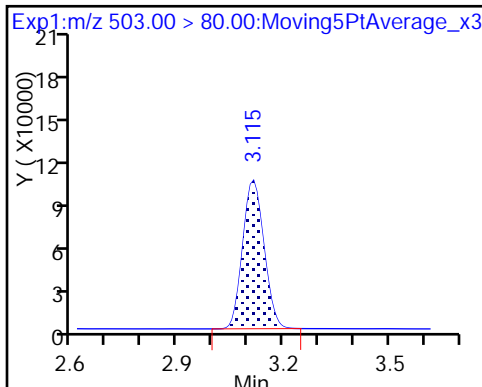
D 19 13C5 PFNA

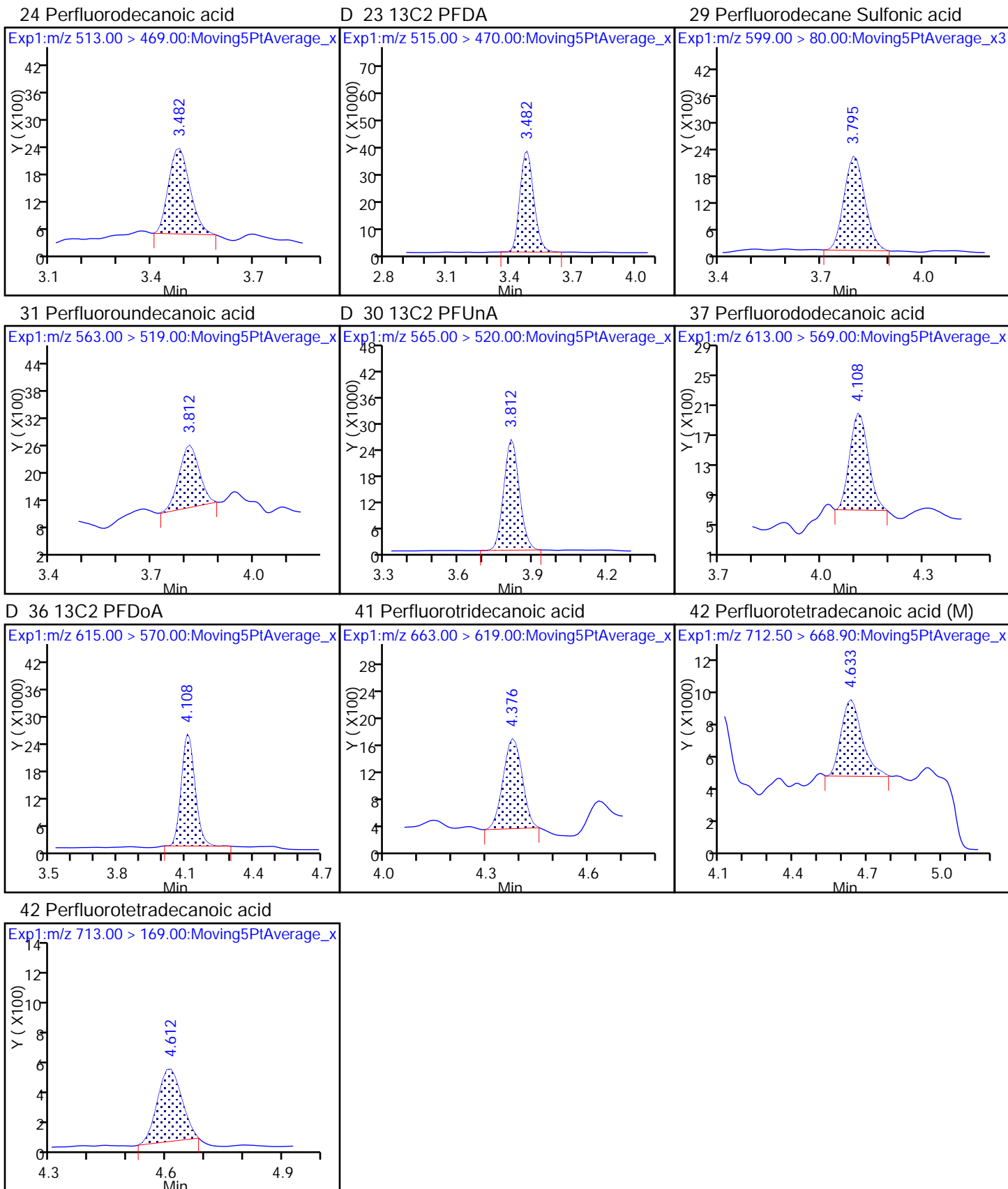


D 18 13C4 PFOS

22 Perfluorooctane Sulfonamide

D 21 13C8 FOSA





TestAmerica Sacramento

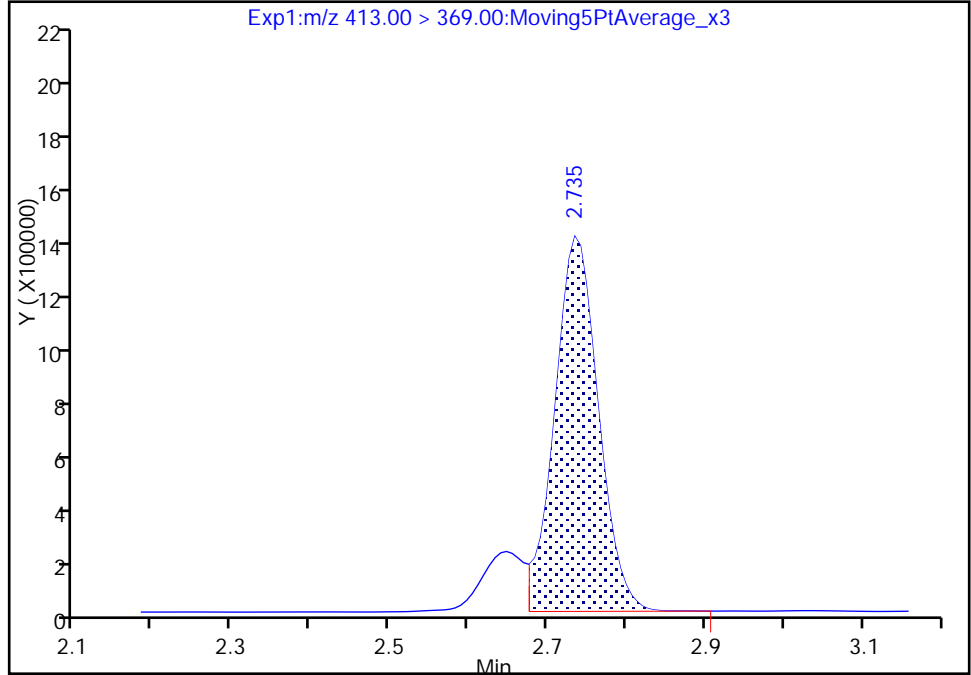
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Injection Date: 24-Jul-2017 20:07:48 Instrument ID: A8_N
Lims ID: 320-29732-C-1-A Lab Sample ID: 320-29732-1
Client ID: TP-PFC-019-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

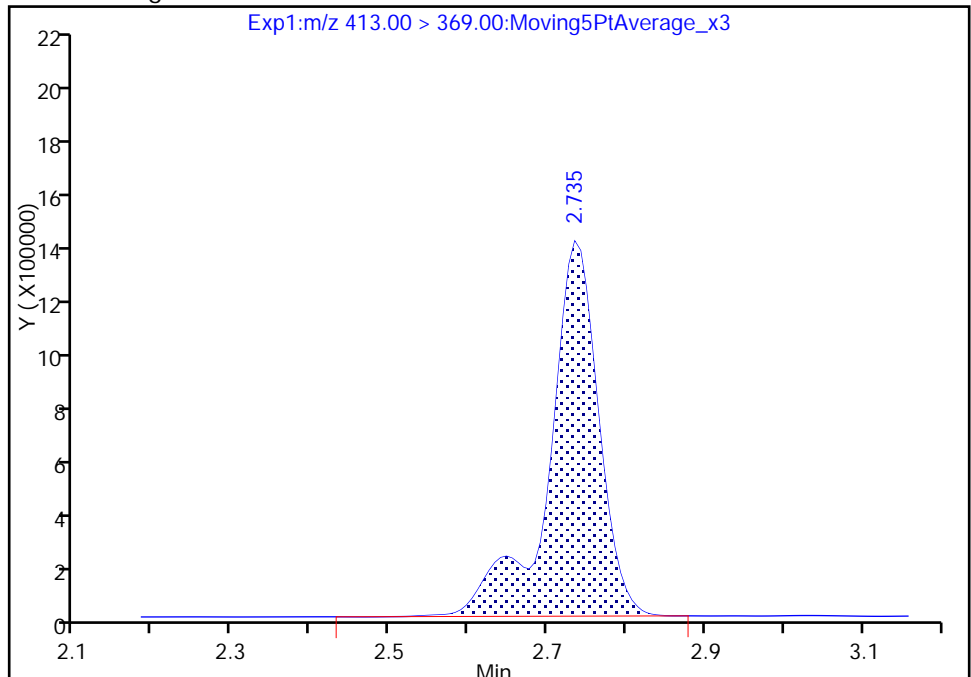
RT: 2.73
Area: 5191957
Amount: 67.480003
Amount Units: ng/ml

Processing Integration Results



RT: 2.73
Area: 5991551
Amount: 77.872348
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 25-Jul-2017 11:27:29
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

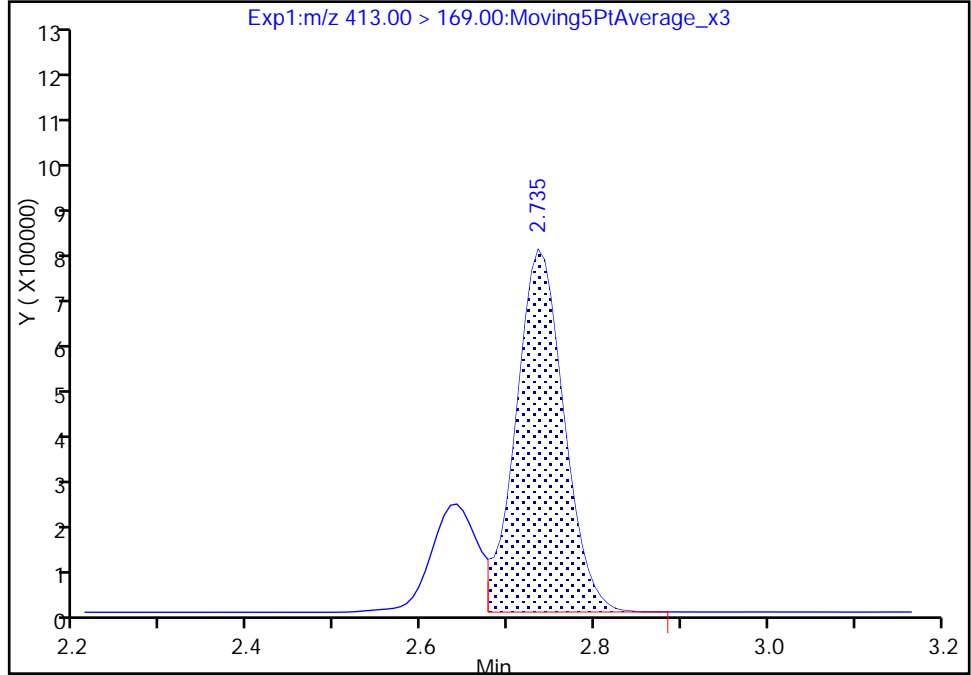
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Lims ID: 320-29732-C-1-A Lab Sample ID: 320-29732-1
Client ID: TP-PFC-019-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

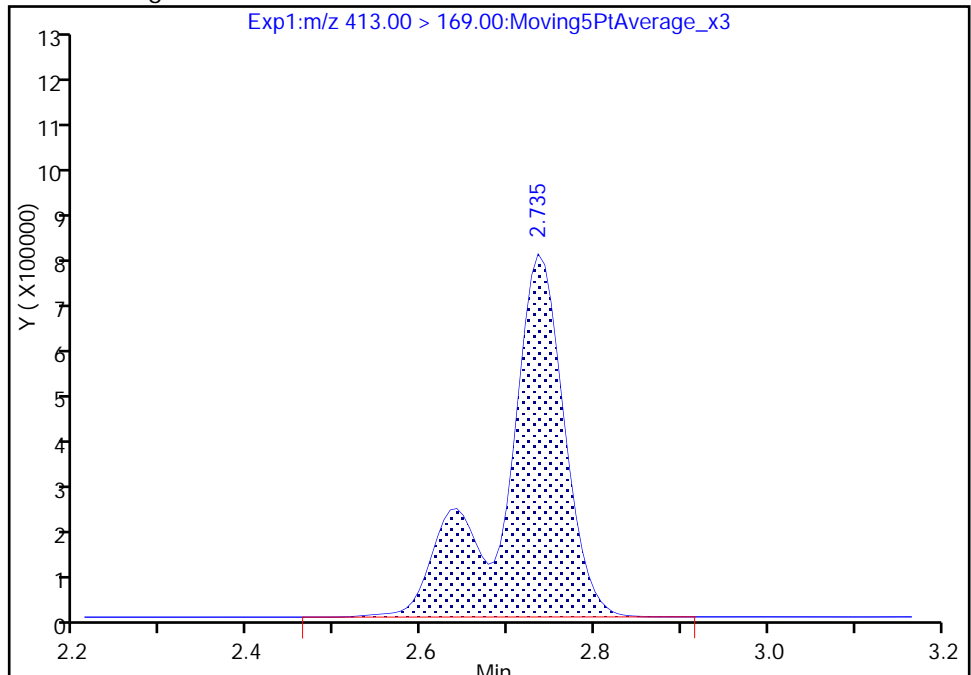
RT: 2.73
Area: 2916719
Amount: 67.480003
Amount Units: ng/ml

Processing Integration Results



RT: 2.73
Area: 3754663
Amount: 77.872348
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 25-Jul-2017 11:27:32

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-MID-CARBON Lab Sample ID: 320-29732-2
 Matrix: Water Lab File ID: 2017.07.24AA_030.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250.8 (mL) Date Analyzed: 07/24/2017 20:14
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175757 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|-----|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 100 | | 2.5 | 1.0 | 0.46 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 16 | | 2.5 | 2.0 | 0.99 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 1.2 | J | 2.5 | 2.0 | 0.78 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 2.0 | U M | 2.5 | 2.0 | 0.80 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 2.0 | U M | 2.5 | 2.0 | 0.75 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 2.0 | U | 2.5 | 2.0 | 0.65 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1.0 | U | 2.5 | 1.0 | 0.44 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.5 | 2.0 | 0.75 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.5 | 2.0 | 0.58 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 2.0 | U | 2.5 | 2.0 | 0.55 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 2.0 | U | 2.5 | 2.0 | 0.92 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 2.0 | U | 2.5 | 2.0 | 0.87 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 2.0 | U | 2.5 | 2.0 | 0.71 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 3.0 | U | 4.0 | 3.0 | 1.3 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 3.0 | U | 4.0 | 3.0 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.5 | J | 40 | 2.0 | 0.64 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-MID-CARBON Lab Sample ID: 320-29732-2
 Matrix: Water Lab File ID: 2017.07.24AA_030.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250.8 (mL) Date Analyzed: 07/24/2017 20:14
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175757 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 6 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 101 | | 25-150 |
| STL00993 | 13C2 PFHxA | 100 | | 25-150 |
| STL00990 | 13C4 PFOA | 102 | | 25-150 |
| STL00995 | 13C5 PFNA | 81 | | 25-150 |
| STL00996 | 13C2 PFDA | 72 | | 25-150 |
| STL00997 | 13C2 PFUnA | 63 | | 25-150 |
| STL00998 | 13C2 PFDoA | 58 | | 25-150 |
| STL00994 | 18O2 PFHxS | 102 | | 25-150 |
| STL00991 | 13C4 PFOS | 99 | | 25-150 |
| STL01892 | 13C4-PFHpA | 116 | | 25-150 |
| STL01893 | 13C5 PFPeA | 102 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_030.d
 Lims ID: 320-29732-C-2-A
 Client ID: TP-PFC-019-MID-CARBON
 Sample Type: Client
 Inject. Date: 24-Jul-2017 20:14:42 ALS Bottle#: 22 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-29732-c-2-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 25-Jul-2017 11:29:47 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 11:29:26

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| 2 Perfluorobutyric acid | 212.90 | > 169.00 | 1.547 | 1.547 | 0.0 | 1.000 | 7256667 | 52.2 | 2184 | |
| D 1 13C4 PFBA | 217.00 | > 172.00 | 1.547 | 1.547 | 0.0 | | 7882017 | 50.5 | 101 | 39506 |
| 4 Perfluoropentanoic acid | 262.90 | > 219.00 | 1.738 | 1.756 | -0.018 | 1.000 | 964124 | 8.17 | 516 | |
| D 3 13C5-PFPeA | 267.90 | > 223.00 | 1.765 | 1.756 | 0.009 | | 5659223 | 51.2 | 102 | 58267 |
| 5 Perfluorobutanesulfonic acid | 298.90 | > 80.00 | 1.784 | 1.784 | 0.0 | 1.000 | 7708 | 0.0368 | 5.9 | |
| | 298.90 | > 99.00 | 1.784 | 1.784 | 0.0 | 1.000 | 6100 | 1.26(0.00-0.00) | 5.7 | |
| 6 Perfluorohexanoic acid | 313.00 | > 269.00 | 2.009 | 2.032 | -0.023 | 1.000 | 59936 | 0.6222 | 115 | |
| D 7 13C2 PFHxA | 315.00 | > 270.00 | 2.032 | 2.032 | 0.0 | | 5059206 | 50.0 | 100 | 38357 |
| 10 Perfluoroheptanoic acid | 363.00 | > 319.00 | 2.372 | 2.366 | 0.006 | 1.000 | 8480 | 0.0848 | 19.7 | M |
| D 9 13C4-PFHpA | 367.00 | > 322.00 | 2.372 | 2.366 | 0.006 | | 4873962 | 58.1 | 116 | 32912 |
| 8 Perfluorohexanesulfonic acid | 399.00 | > 80.00 | 2.388 | 2.382 | 0.006 | 1.000 | 27225 | 0.1787 | 48.3 | |
| D 11 18O2 PFHxS | 403.00 | > 84.00 | 2.388 | 2.382 | 0.006 | | 6659563 | 48.5 | 102 | 29502 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.737 | 2.725 | 0.012 | | 4774 | 50.0 | 263 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.744 | 2.733 | 0.011 | 1.000 | 18315 | 0.2044 | 6.4 | M |
| | 413.00 | > 169.00 | 2.737 | 2.733 | 0.004 | 0.997 | 15180 | 1.21(0.90-1.10) | 137 | M |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|------------------|------|-------|-------|
| D 14 13C4 PFOA | | | | | | | | | | |
| 417.00 > 372.00 | 2.737 | 2.733 | 0.004 | | 4200129 | 51.1 | | 102 | 30295 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.744 | 2.740 | 0.004 | 1.000 | 2788 | 0.0233 | | | 66.6 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.114 | 3.108 | 0.006 | 1.000 | 2464 | 0.0454 | | | 5.2 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.114 | 3.108 | 0.006 | | 2664242 | 40.5 | | 81.1 | 16429 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.114 | 3.108 | 0.006 | | 5100042 | 47.1 | | 98.6 | 19289 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.469 | 3.457 | 0.012 | 1.000 | 12706 | 1.24 | | | 207 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.469 | 3.457 | 0.012 | | 567387 | 3.10 | | 6.2 | 6275 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.487 | 3.467 | 0.020 | 1.000 | 3382 | 0.0861 | | | 19.8 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.487 | 3.467 | 0.020 | | 2003960 | 35.9 | | 71.8 | 14098 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.795 | 3.778 | 0.017 | 1.000 | 2083 | 0.0314 | | | 52.1 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.812 | 3.797 | 0.015 | 1.000 | 6240 | 0.1309 | | | 14.4 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.812 | 3.797 | 0.015 | | 1285527 | 31.6 | | 63.1 | 6783 | |
| D 36 13C2 PFDaA | | | | | | | | | | |
| 615.00 > 570.00 | 4.106 | 4.095 | 0.011 | | 1305899 | 29.2 | | 58.5 | 3465 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.374 | 4.358 | 0.016 | 1.000 | 3298 | 0.1483 | | | 3.0 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | |
| 712.50 > 668.90 | 4.652 | 4.596 | 0.056 | 1.000 | 43158 | 0.8597 | | | 8.4 | |
| 713.00 > 169.00 | 4.611 | 4.596 | 0.015 | 0.991 | 3164 | | 13.64(0.00-0.00) | | 115 | |

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_030.d

Injection Date: 24-Jul-2017 20:14:42

Instrument ID: A8_N

Lims ID: 320-29732-C-2-A

Lab Sample ID: 320-29732-2

Client ID: TP-PFC-019-MID-CARBON

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

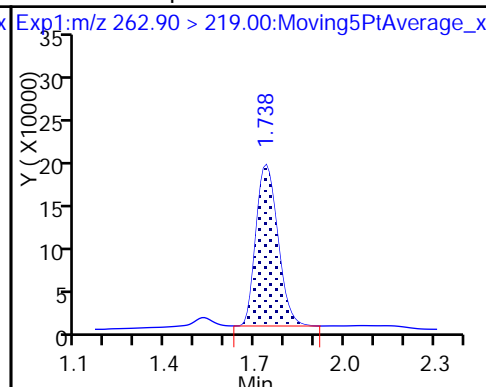
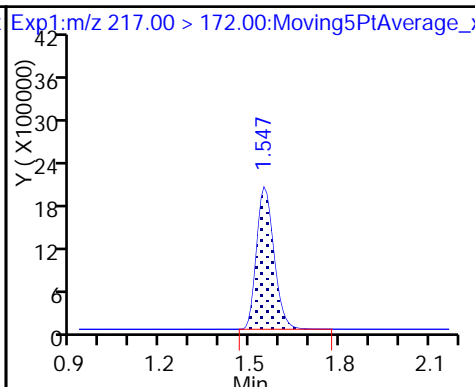
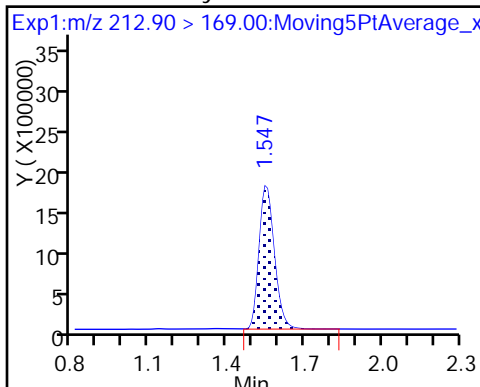
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

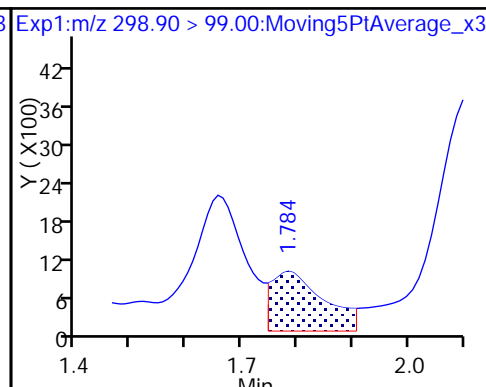
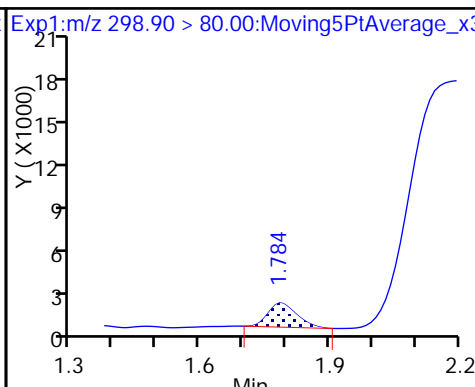
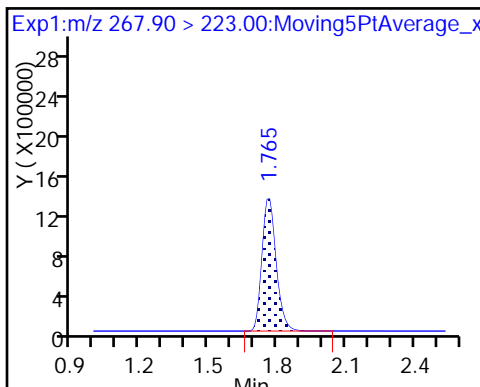
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

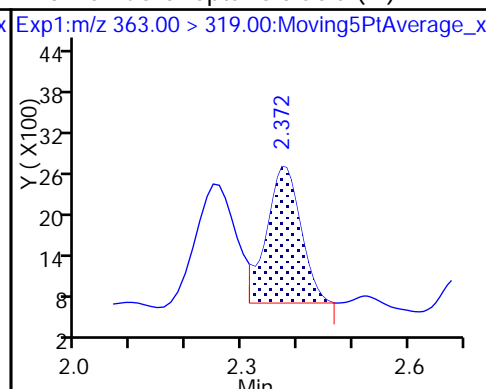
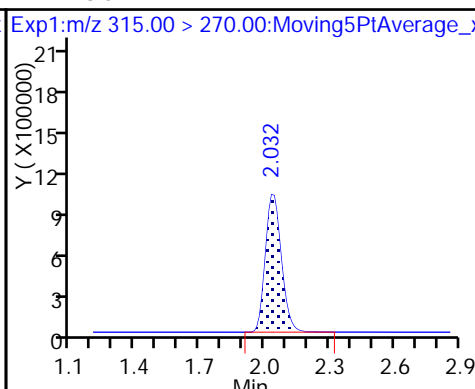
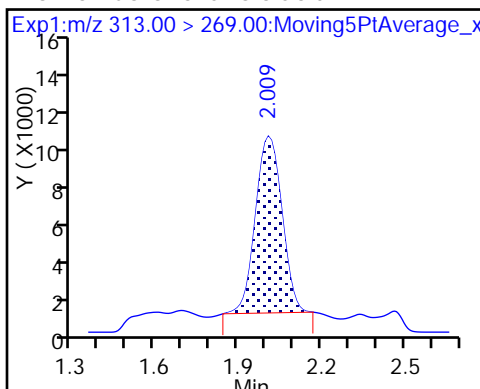
5 Perfluorobutanesulfonic acid



6 Perfluorohexanoic acid

D 7 13C2 PFHxA

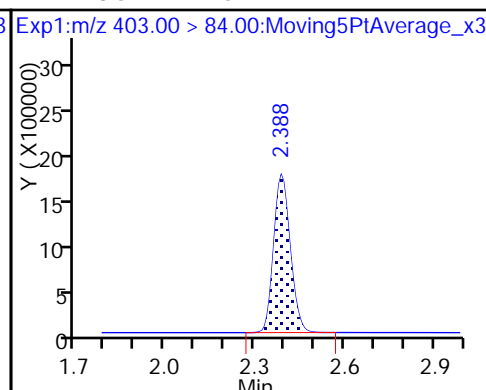
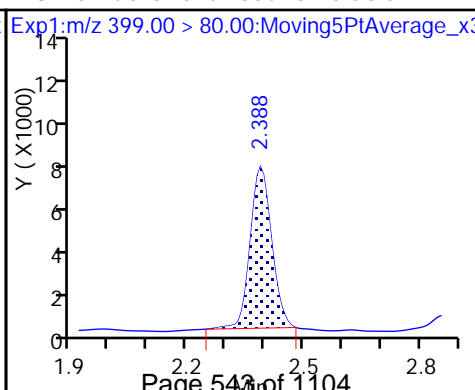
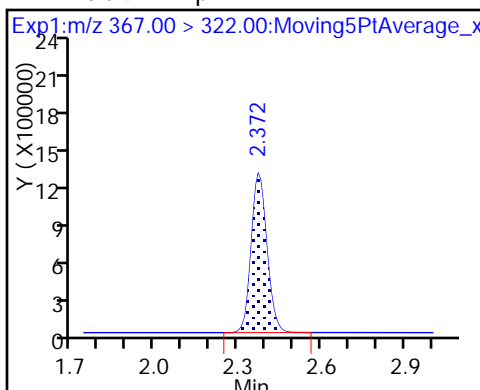
10 Perfluoroheptanoic acid (M)



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

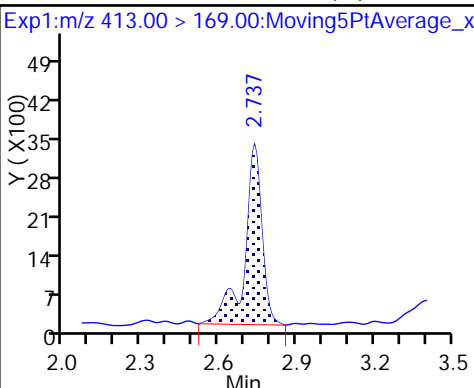
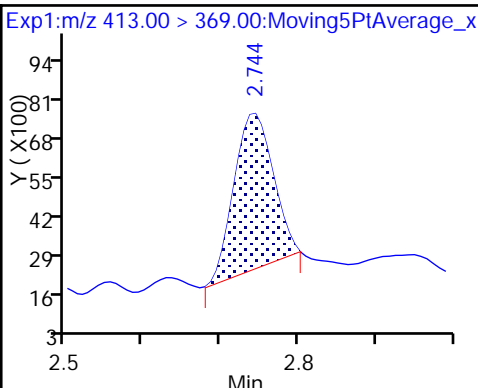
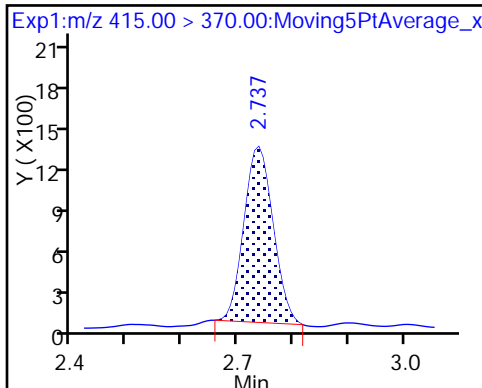
D 11 18O2 PFHxS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

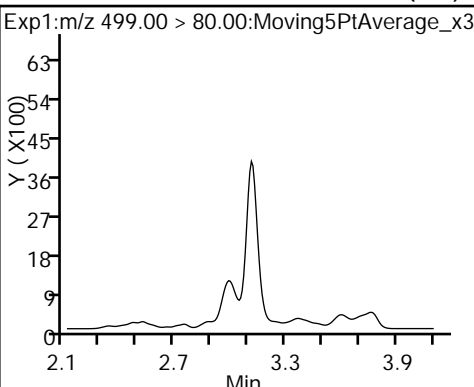
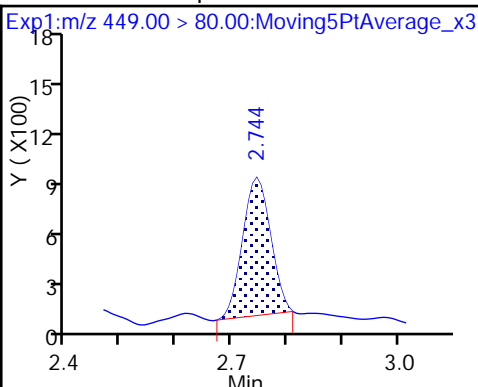
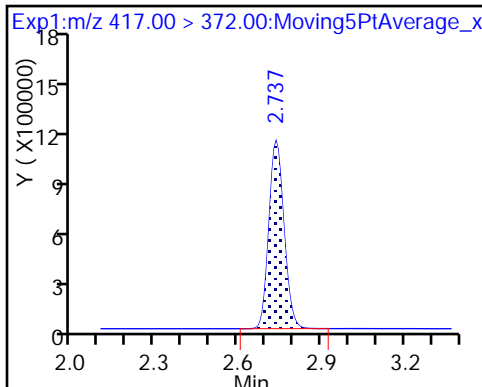
15 Perfluorooctanoic acid (M)



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

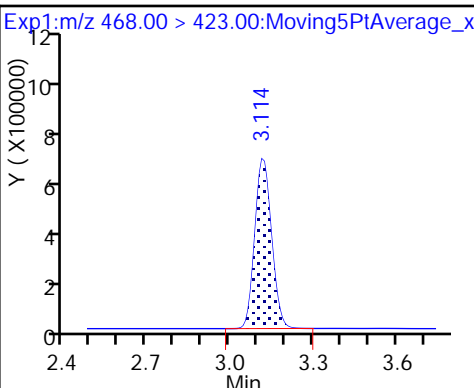
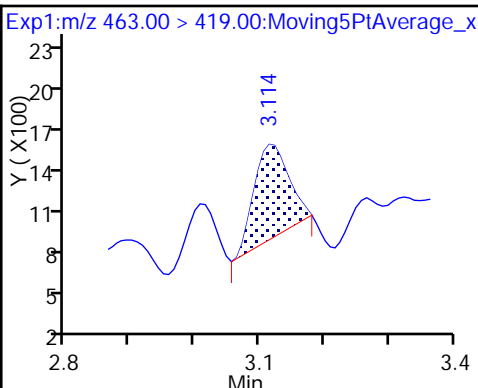
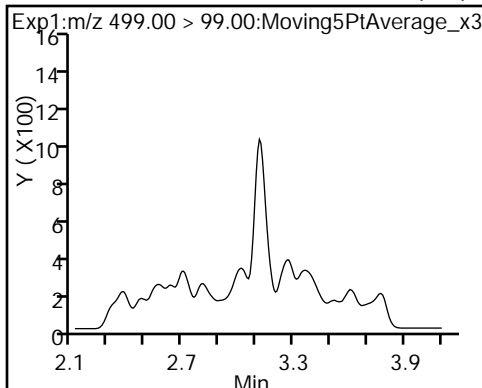
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

20 Perfluorononanoic acid

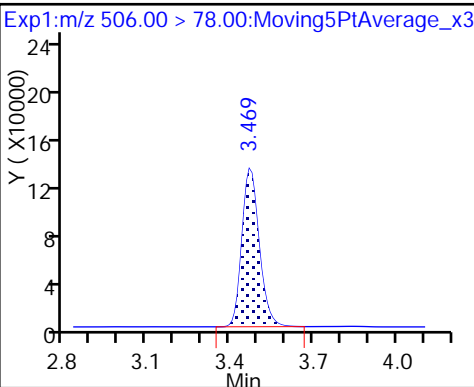
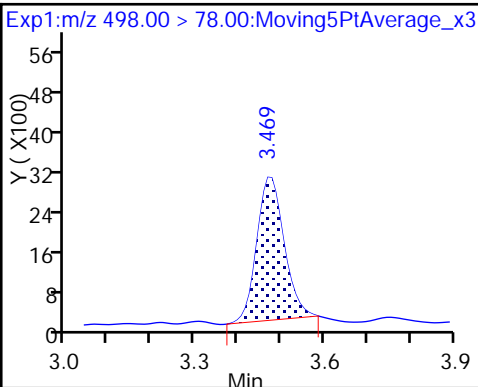
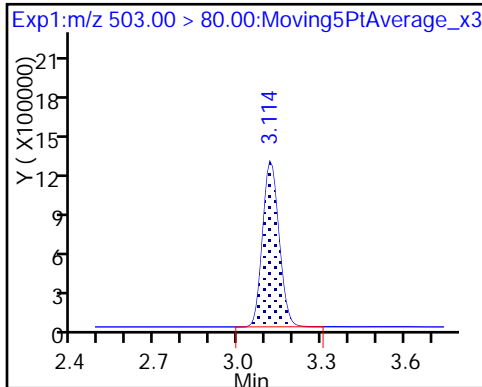
D 19 13C5 PFNA



D 18 13C4 PFOS

22 Perfluorooctane Sulfonamide

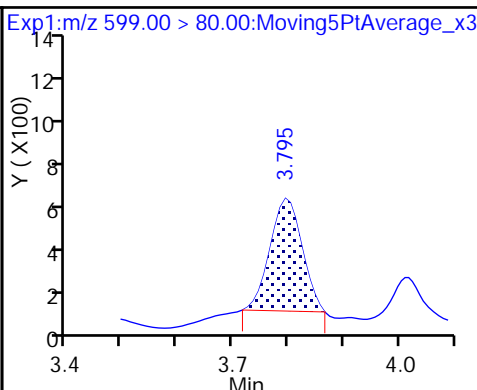
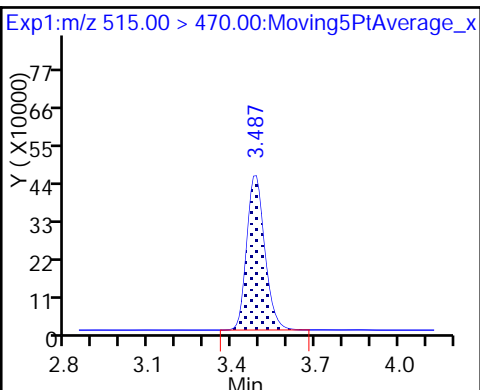
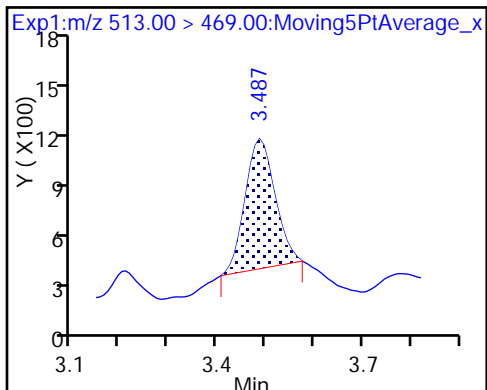
D 21 13C8 FOSA



24 Perfluorodecanoic acid

D 23 13C2 PFDA

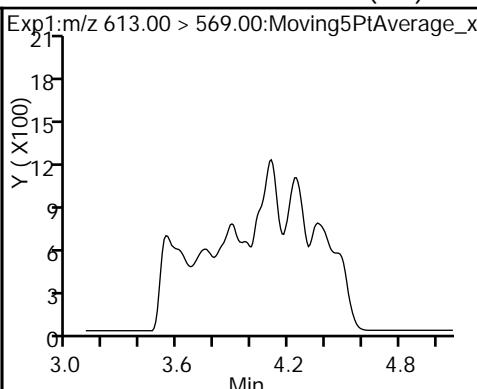
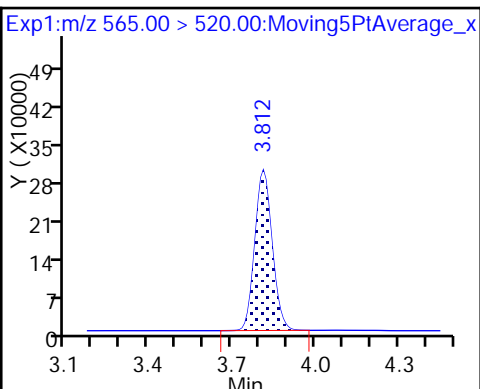
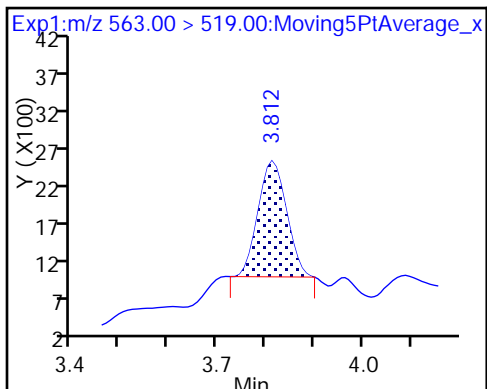
29 Perfluorodecane Sulfonic acid



31 Perfluoroundecanoic acid

D 30 13C2 PFUa

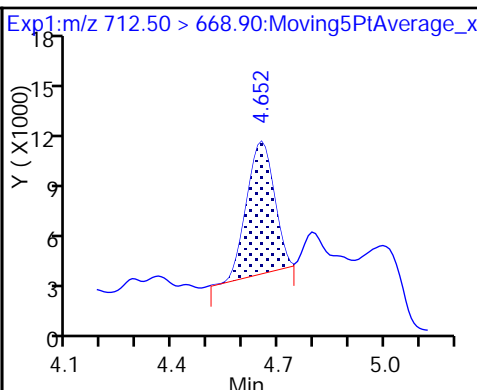
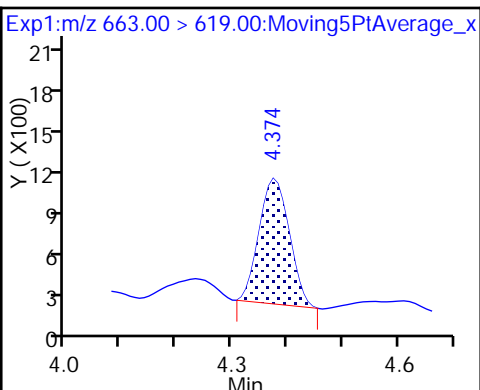
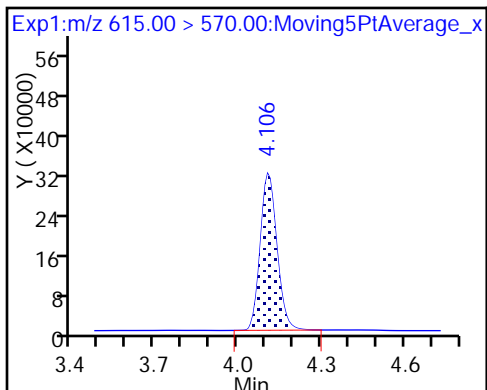
37 Perfluorododecanoic acid (ND)



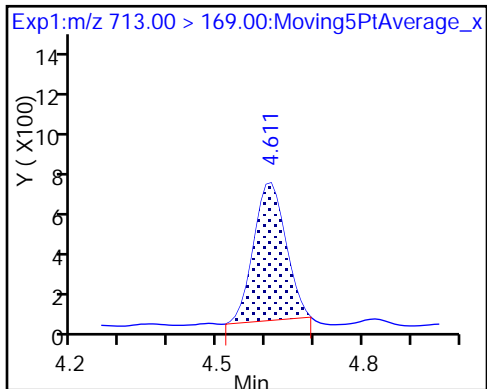
D 36 13C2 PFDa

41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



TestAmerica Sacramento

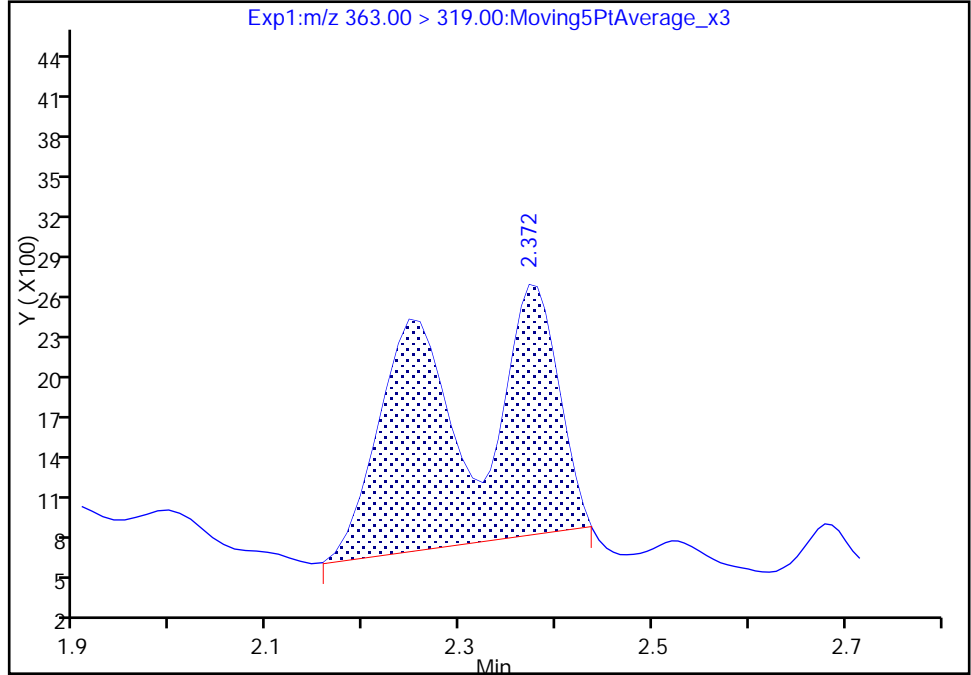
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Injection Date: 24-Jul-2017 20:14:42 Instrument ID: A8_N
Lims ID: 320-29732-C-2-A Lab Sample ID: 320-29732-2
Client ID: TP-PFC-019-MID-CARBON
Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

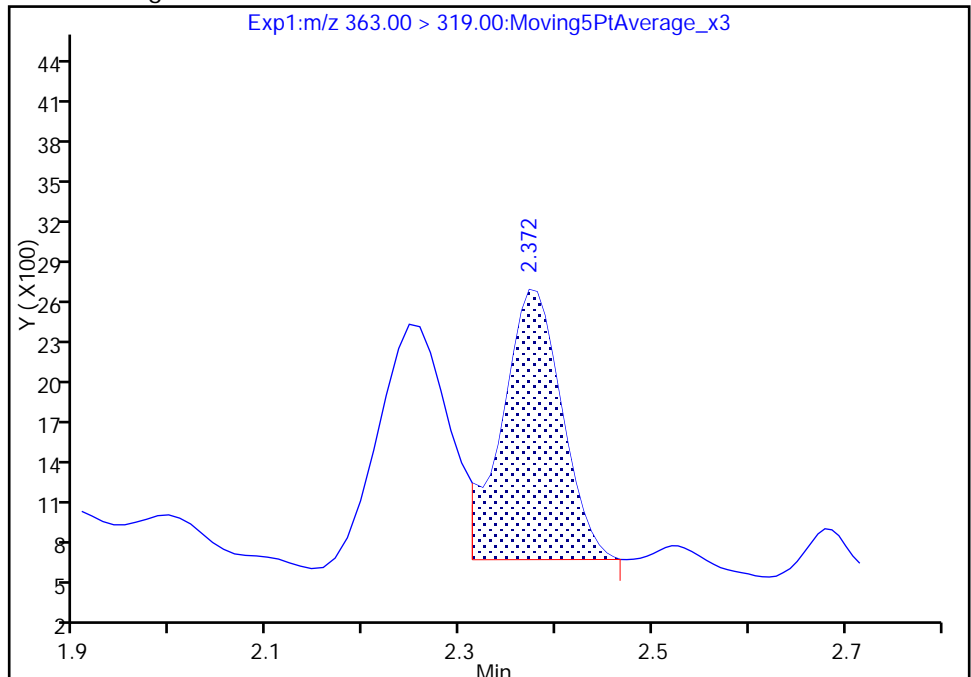
RT: 2.37
Area: 15680
Amount: 0.156720
Amount Units: ng/ml

Processing Integration Results



RT: 2.37
Area: 8480
Amount: 0.084757
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 25-Jul-2017 11:29:07

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

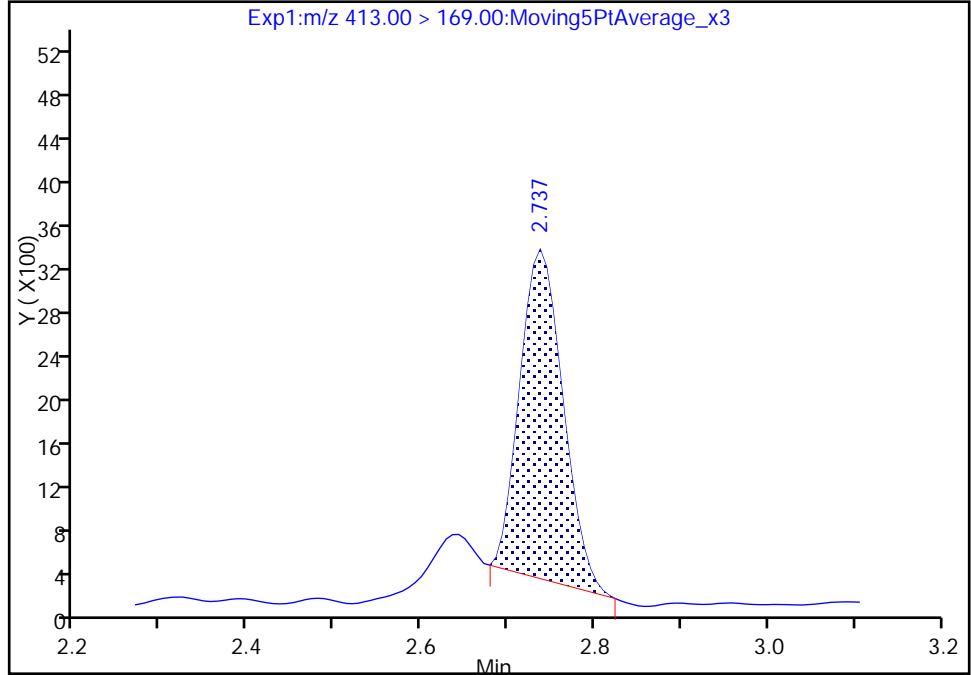
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Injection Date: 24-Jul-2017 20:14:42 Instrument ID: A8_N
Lims ID: 320-29732-C-2-A Lab Sample ID: 320-29732-2
Client ID: TP-PFC-019-MID-CARBON
Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

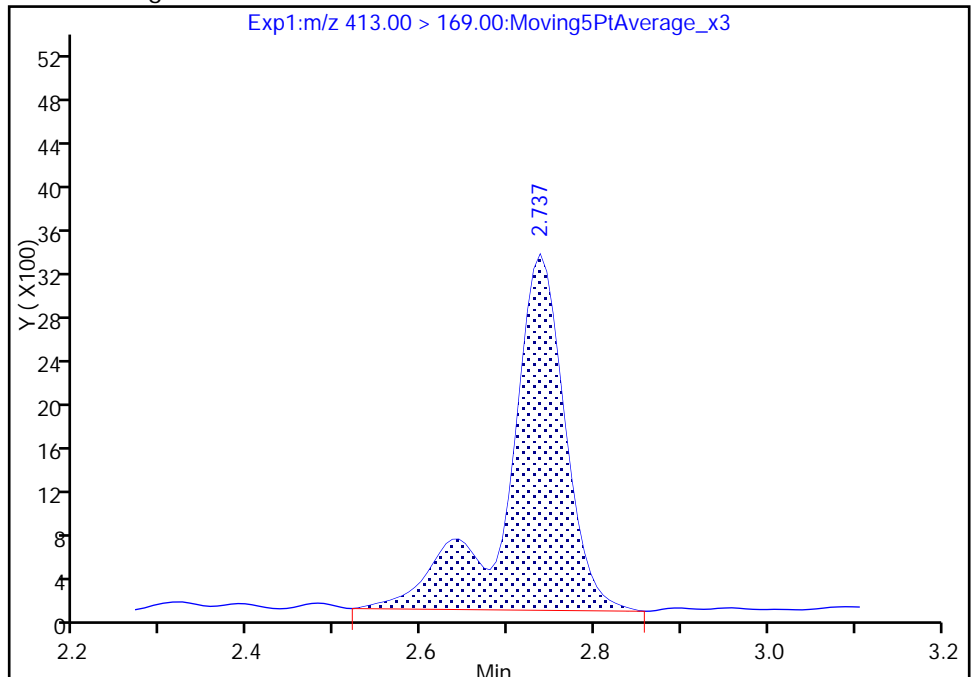
RT: 2.74
Area: 10457
Amount: 0.204386
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 15180
Amount: 0.204386
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-MID-CARBON RE Lab Sample ID: 320-29732-2 RE
 Matrix: Water Lab File ID: 2017.07.25B_010.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16
 Extraction Method: 3535 Date Extracted: 07/20/2017 09:15
 Sample wt/vol: 252 (mL) Date Analyzed: 07/25/2017 15:12
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175951 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|-------------------------------------|--------|-------|-----|------|------|
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 1.4 | J M Q | 2.5 | 0.99 | 0.40 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00998 | 13C2 PFD0A | 92 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_010.d
 Lims ID: 320-29732-A-2-A
 Client ID: TP-PFC-019-MID-CARBON
 Sample Type: Client
 Inject. Date: 25-Jul-2017 15:12:53 ALS Bottle#: 9 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-29732-a-2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:29:21

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.556 | 1.559 | -0.003 | 6920652 | 44.4 | | 88.7 | 22571 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.556 | 1.559 | -0.003 | 1.000 | 6245005 | 51.2 | | 2077 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.765 | 1.778 | -0.013 | 5103593 | 46.2 | | 92.4 | 32176 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.738 | 1.778 | -0.040 | 1.000 | 796679 | 7.49 | | 636 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.784 | 1.806 | -0.022 | 1.000 | 19171 | 0.0883 | | 13.0 | |
| | 298.90 > 99.00 | 1.784 | 1.806 | -0.022 | 1.000 | 8799 | 2.18(0.00-0.00) | | 11.2 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.043 | 2.058 | -0.015 | 4904639 | 48.5 | | 97.0 | 24391 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.032 | 2.058 | -0.026 | 1.000 | 72423 | 0.7755 | | 137 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.373 | 2.393 | -0.020 | 4795857 | 57.2 | | 114 | 26709 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.373 | 2.393 | -0.020 | 1.000 | 10169 | 0.1033 | | 24.6 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.389 | 2.409 | -0.020 | 6894738 | 50.2 | | 106 | 25745 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.389 | 2.409 | -0.020 | 1.000 | 91234 | 0.5785 | | 121 | |
| D 14 13C4 PFOA | 417.00 > 372.00 | 2.731 | 2.756 | -0.025 | 4261854 | 51.9 | | 104 | 25703 | |
| * 62 13C2-PFOA | 415.00 > 370.00 | 2.731 | 2.756 | -0.025 | 3429 | 50.0 | | | 137 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|------------------|------|-------|-------|
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.738 | 2.756 | -0.018 | 1.000 | 137651 | 1.51 | | | 42.2 | |
| 413.00 > 169.00 | 2.731 | 2.756 | -0.025 | 0.997 | 83181 | | 1.65(0.90-1.10) | | 208 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.738 | 2.763 | -0.025 | 1.000 | 1958 | 0.0160 | | | 59.9 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.106 | 3.131 | -0.025 | 1.000 | 63301 | 0.5498 | | | 352 | |
| 499.00 > 99.00 | 3.106 | 3.131 | -0.025 | 1.000 | 13264 | | 4.77(0.90-1.10) | | 89.1 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.106 | 3.131 | -0.025 | | 3050827 | 46.4 | | 92.8 | 14271 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.106 | 3.131 | -0.025 | | 5205981 | 48.1 | | 101 | 16643 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.464 | 3.487 | -0.023 | | 503727 | 2.76 | | 5.5 | 6977 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.473 | 3.497 | -0.024 | | 3012088 | 53.9 | | 108 | 9511 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.464 | 3.497 | -0.033 | 1.000 | 1902 | 0.0322 | | | 13.3 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.779 | 3.803 | -0.024 | 1.000 | 2769 | 0.0408 | | | 129 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.798 | 3.822 | -0.024 | 1.000 | 6469 | 0.0462 | | | 15.8 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.798 | 3.822 | -0.024 | | 2075628 | 51.0 | | 102 | 7894 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.096 | 4.116 | -0.020 | 1.000 | 3350 | 0.0880 | | | 8.8 | |
| D 36 13C2 PFDoA | | | | | | | | | | |
| 615.00 > 570.00 | 4.096 | 4.116 | -0.020 | | 2048447 | 45.9 | | 91.7 | 4807 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.364 | 4.380 | -0.016 | 1.000 | 4977 | 0.1427 | | | 2.1 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | |
| 712.50 > 668.90 | 4.630 | 4.614 | 0.016 | 1.000 | 56320 | 0.7152 | | | 4.3 | M |
| 713.00 > 169.00 | 4.599 | 4.614 | -0.015 | 0.993 | 4362 | | 12.91(0.00-0.00) | | 94.7 | M |

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_010.d

Injection Date: 25-Jul-2017 15:12:53

Instrument ID: A8_N

Lims ID: 320-29732-A-2-A

Lab Sample ID: 320-29732-2

Client ID: TP-PFC-019-MID-CARBON

Operator ID: SACINSTLCMS01

ALS Bottle#: 9

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

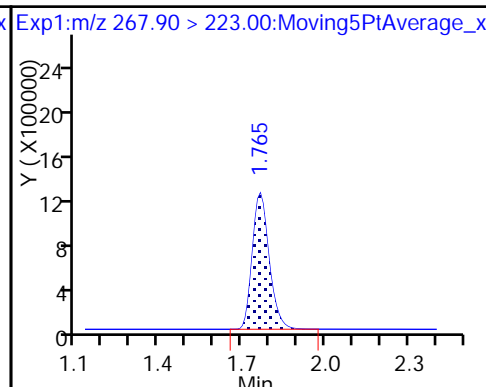
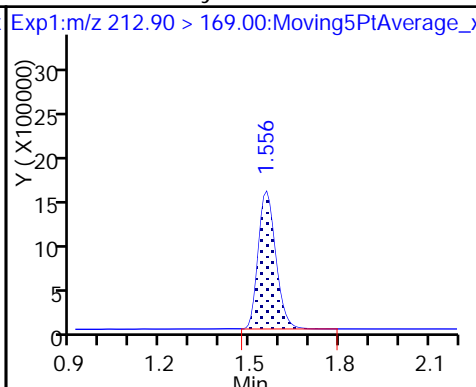
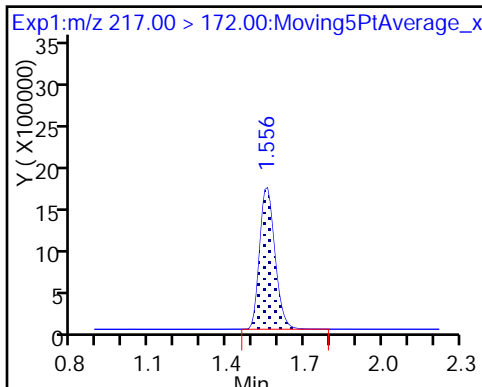
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

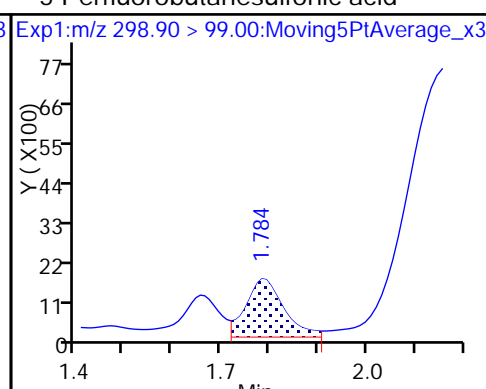
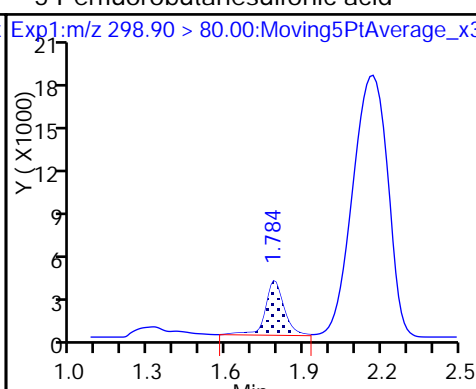
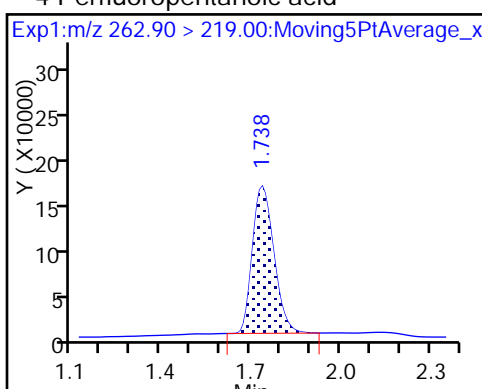
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

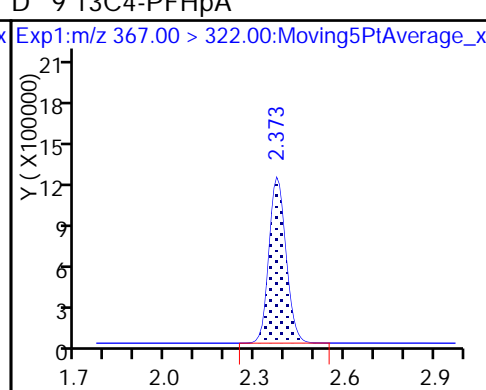
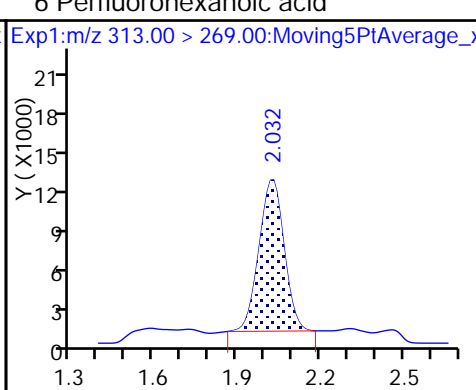
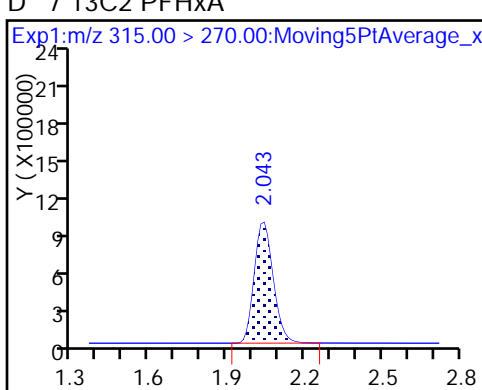
5 Perfluorobutanesulfonic acid



D 7 13C2 PFHxA

6 Perfluorohexanoic acid

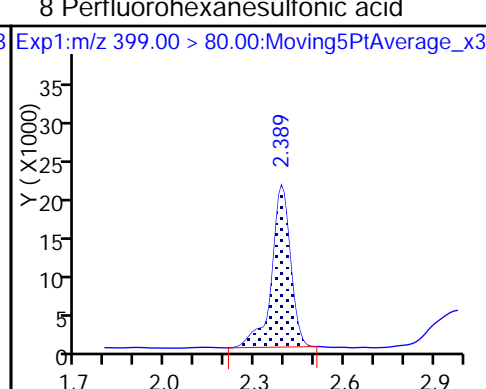
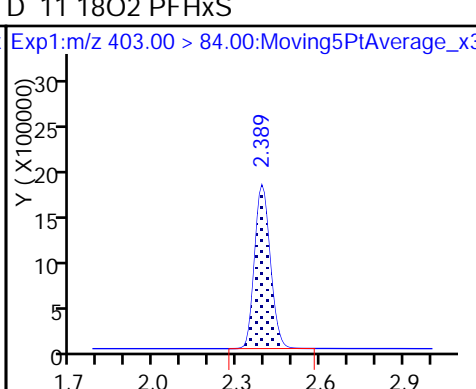
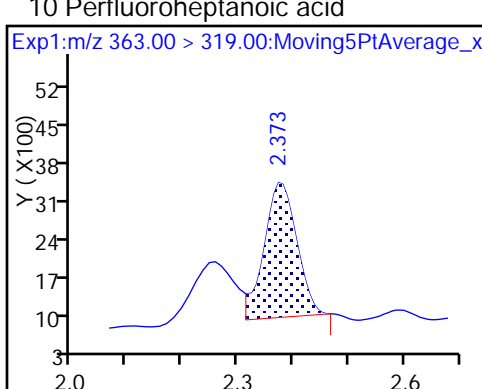
D 9 13C4-PFHpA



10 Perfluoroheptanoic acid

D 11 18O2 PFHxS

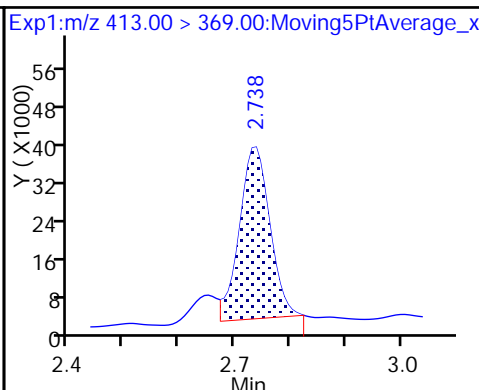
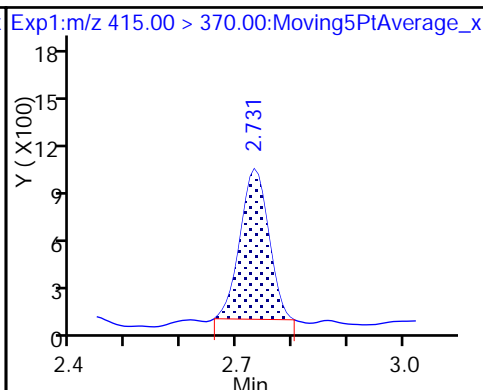
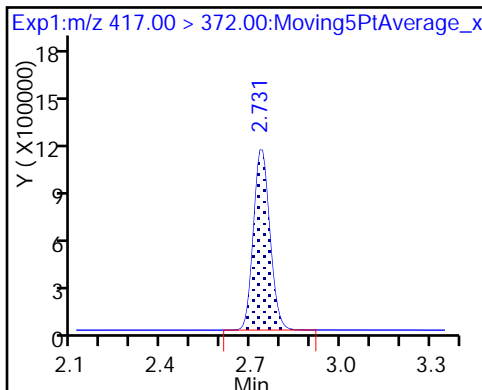
8 Perfluorohexanesulfonic acid



D 14 13C4 PFOA

* 62 13C2-PFOA

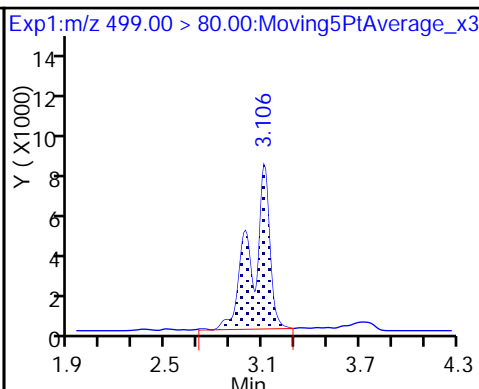
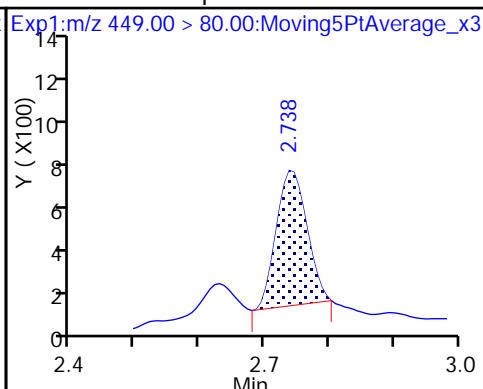
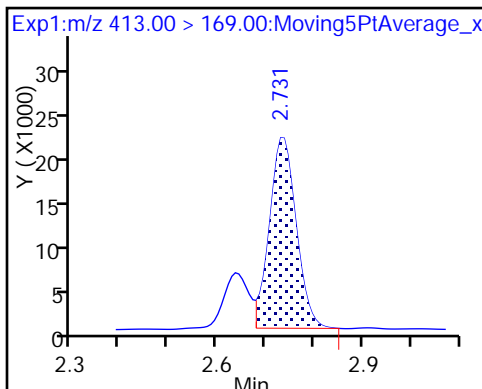
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

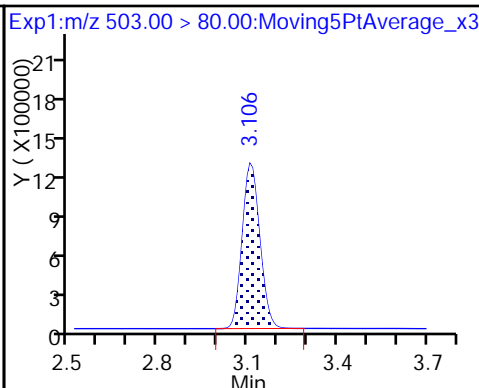
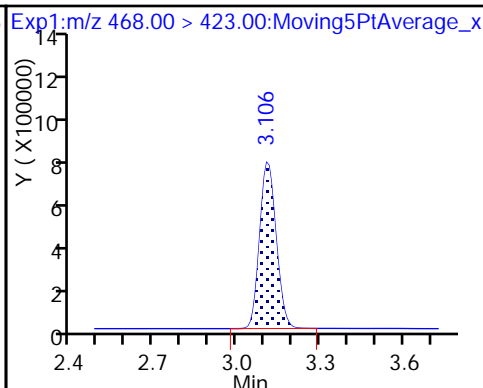
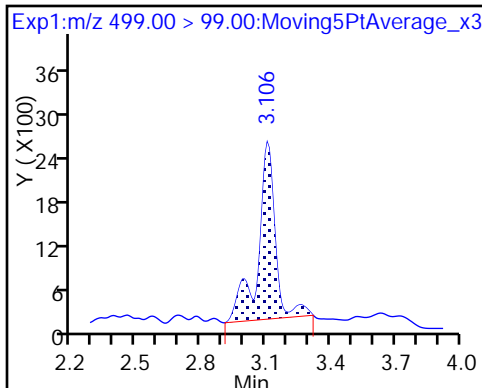
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

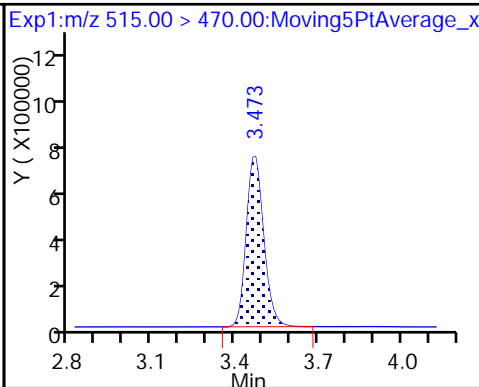
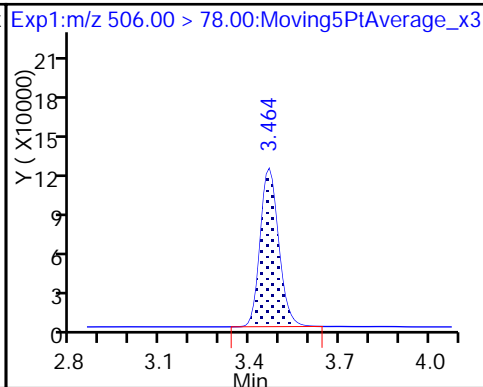
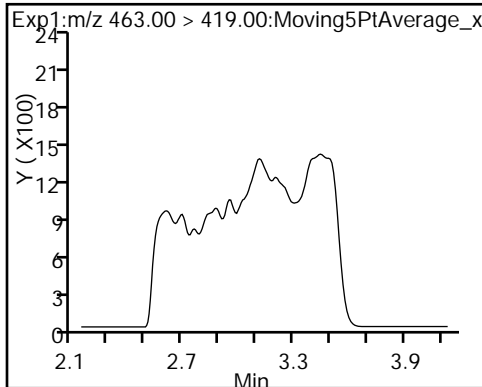
D 18 13C4 PFOS



20 Perfluorononanoic acid (ND)

D 21 13C8 FOSA

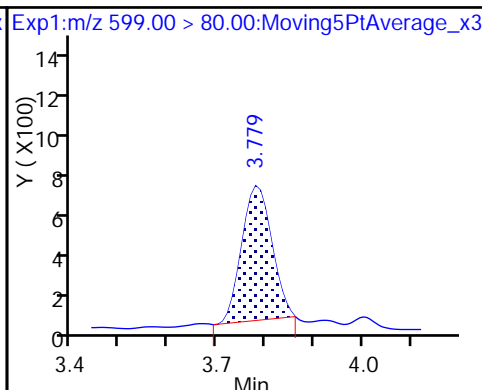
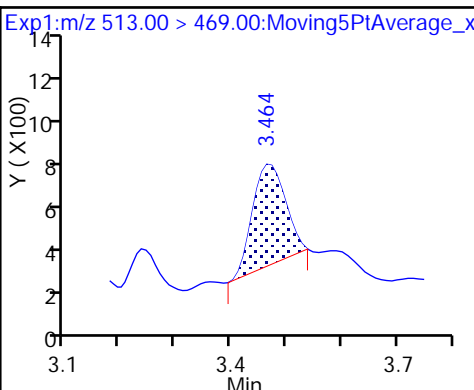
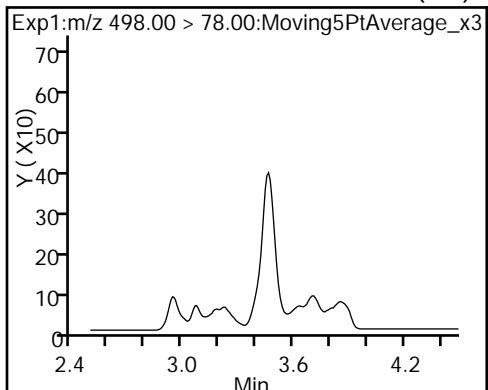
D 23 13C2 PFDA



22 Perfluorooctane Sulfonamide (ND)

24 Perfluorodecanoic acid

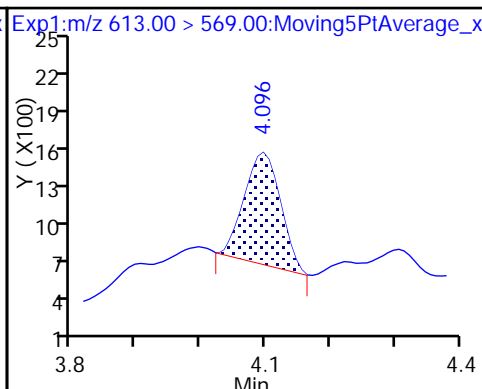
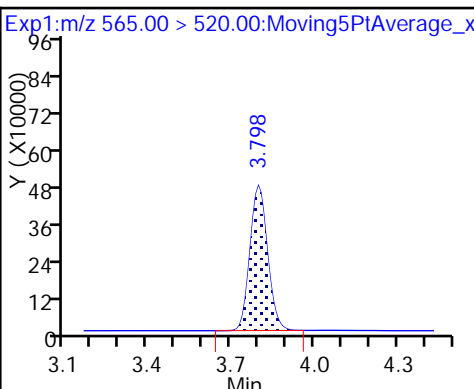
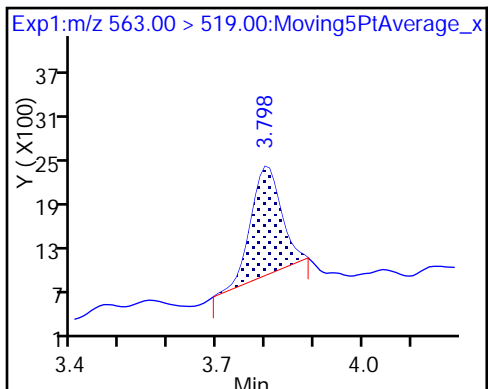
29 Perfluorodecane Sulfonic acid



31 Perfluoroundecanoic acid

D 30 13C2 PFUoA

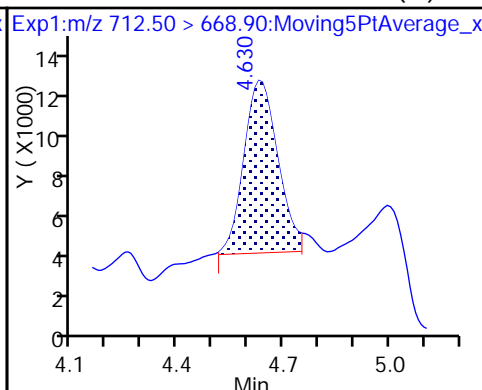
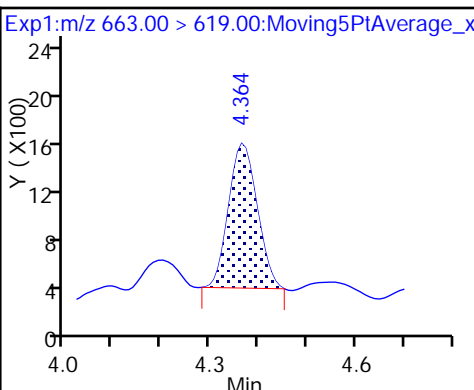
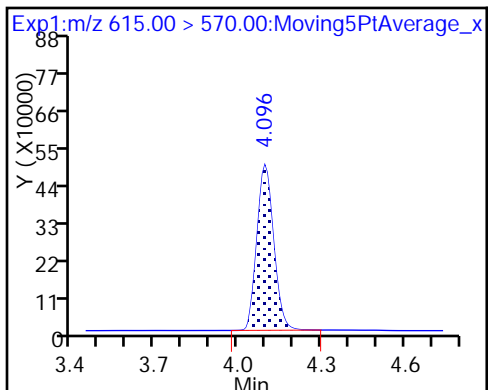
37 Perfluorododecanoic acid



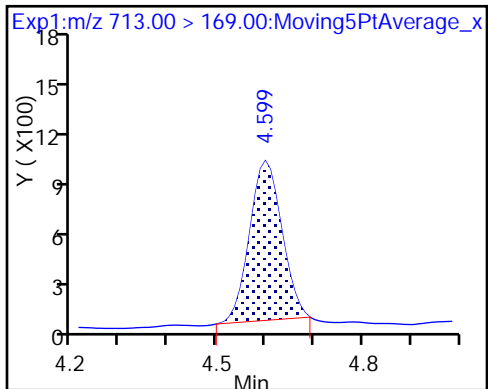
D 36 13C2 PFDoA

41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid (M)



42 Perfluorotetradecanoic acid



TestAmerica Sacramento

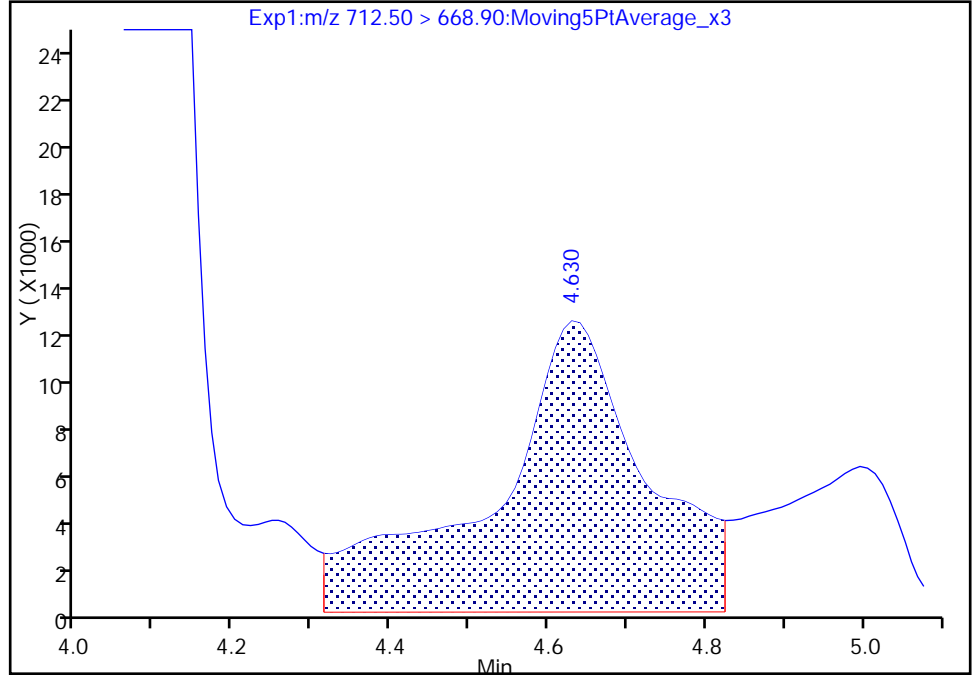
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_010.d
Injection Date: 25-Jul-2017 15:12:53 Instrument ID: A8_N
Lims ID: 320-29732-A-2-A Lab Sample ID: 320-29732-2
Client ID: TP-PFC-019-MID-CARBON
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

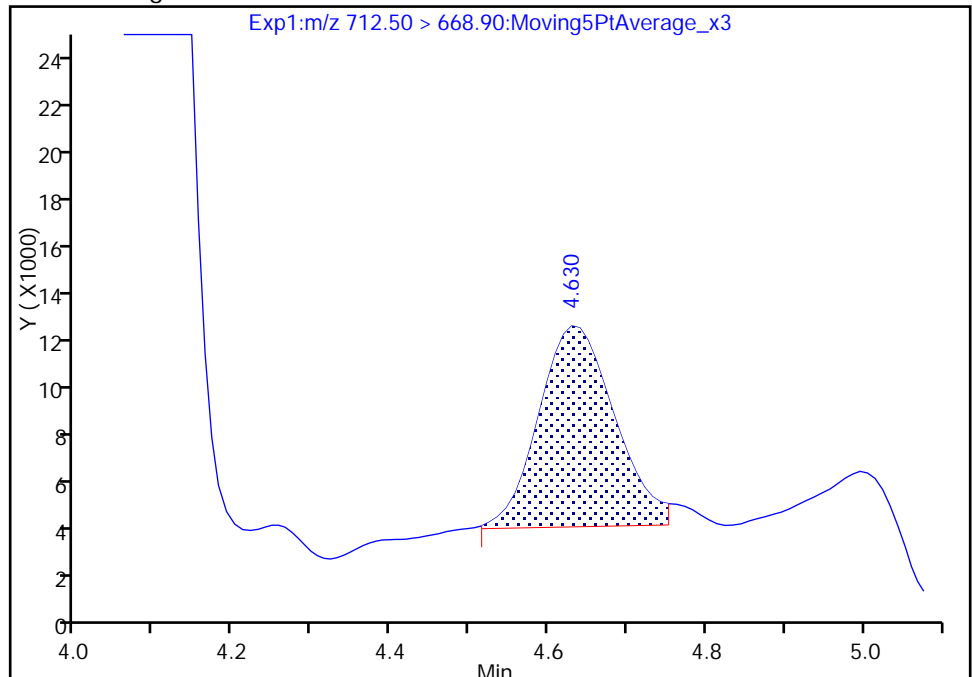
RT: 4.63
Area: 167703
Amount: 2.129725
Amount Units: ng/ml

Processing Integration Results



RT: 4.63
Area: 56320
Amount: 0.715229
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE Lab Sample ID: 320-29732-3
 Matrix: Water Lab File ID: 2017.07.23A_018.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 259.5 (mL) Date Analyzed: 07/23/2017 16:30
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|------|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 85 | | 2.4 | 0.96 | 0.44 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 24 | | 2.4 | 1.9 | 0.95 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 6.1 | | 2.4 | 1.9 | 0.76 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 1.9 | U | 2.4 | 1.9 | 0.77 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 0.76 | J M | 2.4 | 1.9 | 0.72 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 1.9 | U | 2.4 | 1.9 | 0.63 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 0.96 | U | 2.4 | 0.96 | 0.42 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 1.9 | U | 2.4 | 1.9 | 0.72 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 1.9 | U | 2.4 | 1.9 | 0.56 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 1.9 | U | 2.4 | 1.9 | 0.53 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 1.9 | U | 2.4 | 1.9 | 0.88 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 1.9 | U | 2.4 | 1.9 | 0.84 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 1.9 | U | 2.4 | 1.9 | 0.69 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 2.9 | U | 3.9 | 2.9 | 1.2 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 2.9 | U | 3.9 | 2.9 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.1 | J | 39 | 1.9 | 0.61 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE Lab Sample ID: 320-29732-3
 Matrix: Water Lab File ID: 2017.07.23A_018.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 259.5 (mL) Date Analyzed: 07/23/2017 16:30
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 2 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 102 | | 25-150 |
| STL00993 | 13C2 PFHxA | 101 | | 25-150 |
| STL00990 | 13C4 PFOA | 102 | | 25-150 |
| STL00995 | 13C5 PFNA | 85 | | 25-150 |
| STL00996 | 13C2 PFDA | 93 | | 25-150 |
| STL00997 | 13C2 PFUnA | 78 | | 25-150 |
| STL00998 | 13C2 PFDoA | 69 | | 25-150 |
| STL00994 | 18O2 PFHxS | 105 | | 25-150 |
| STL00991 | 13C4 PFOS | 102 | | 25-150 |
| STL01892 | 13C4-PFHpA | 118 | | 25-150 |
| STL01893 | 13C5 PFPeA | 98 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_018.d
 Lims ID: 320-29732-C-3-A
 Client ID: TP-PFC-019-TPE
 Sample Type: Client
 Inject. Date: 23-Jul-2017 16:30:15 ALS Bottle#: 16 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-29732-c-3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 13:03:07 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 13:02:01

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | | | | | | | | | | |
| 212.90 > 169.00 | 1.554 | 1.556 | -0.002 | 1.000 | 6196607 | 44.2 | | | 1751 | |
| D 1 13C4 PFBA | | | | | | | | | | |
| 217.00 > 172.00 | 1.554 | 1.556 | -0.002 | | 7953296 | 51.0 | | 102 | 32941 | |
| 4 Perfluoropentanoic acid | | | | | | | | | | |
| 262.90 > 219.00 | 1.764 | 1.775 | -0.011 | 1.000 | 1389105 | 12.2 | | | 1444 | |
| D 3 13C5-PFPeA | | | | | | | | | | |
| 267.90 > 223.00 | 1.764 | 1.775 | -0.011 | | 5441843 | 49.2 | | 98.5 | 59285 | |
| 5 Perfluorobutanesulfonic acid | | | | | | | | | | |
| 298.90 > 80.00 | 1.791 | 1.802 | -0.011 | 1.000 | 22423 | 0.1042 | | | 17.1 | |
| 298.90 > 99.00 | 1.791 | 1.802 | -0.011 | 1.000 | 15185 | | 1.48(0.00-0.00) | | 16.7 | |
| 6 Perfluorohexanoic acid | | | | | | | | | | |
| 313.00 > 269.00 | 2.040 | 2.055 | -0.015 | 1.000 | 310521 | 3.19 | | | 669 | |
| D 7 13C2 PFHxA | | | | | | | | | | |
| 315.00 > 270.00 | 2.052 | 2.055 | -0.003 | | 5111820 | 50.5 | | 101 | 42650 | |
| 10 Perfluoroheptanoic acid | | | | | | | | | | |
| 363.00 > 319.00 | 2.390 | 2.403 | -0.013 | 1.000 | 6286 | 0.0620 | | | 17.9 | |
| D 9 13C4-PFHpA | | | | | | | | | | |
| 367.00 > 322.00 | 2.390 | 2.403 | -0.013 | | 4939500 | 58.9 | | 118 | 32086 | |
| 8 Perfluorohexanesulfonic acid | | | | | | | | | | |
| 399.00 > 80.00 | 2.406 | 2.419 | -0.013 | 1.000 | 31729 | 0.2030 | | | 44.6 | |
| D 11 18O2 PFHxS | | | | | | | | | | |
| 403.00 > 84.00 | 2.406 | 2.419 | -0.013 | | 6832727 | 49.7 | | 105 | 37820 | |
| * 62 13C2-PFOA | | | | | | | | | | |
| 415.00 > 370.00 | 2.761 | 2.764 | -0.003 | | 3256 | 50.0 | | | 157 | |
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.761 | 2.771 | -0.010 | 1.000 | 35522 | 0.3965 | | | 9.0 | M |
| 413.00 > 169.00 | 2.761 | 2.771 | -0.010 | 1.000 | 23454 | | 1.51(0.90-1.10) | | 127 | M |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|--------|-----------|-----------|-----------|----------|-----------------|---------------|------------------|-------|-------|
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.761 | 2.771 | -0.010 | 4199369 | 51.1 | 102 | 34702 | |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.775 | 2.778 | -0.003 | 1664 | 0.0134 | | 62.5 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.143 | 3.151 | -0.008 | 524 | 0.009160 | | 1.9 | |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.135 | 3.151 | -0.016 | 5295253 | 48.9 | 102 | 16937 | |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.143 | 3.151 | -0.008 | 2809355 | 42.7 | 85.5 | 14073 | |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.492 | 3.507 | -0.015 | 185829 | 1.02 | 2.0 | 4243 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.501 | 3.507 | -0.006 | 3642 | 1.09 | | 77.6 | |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.501 | 3.507 | -0.006 | 2593789 | 46.5 | 92.9 | 7500 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.810 | 3.815 | -0.005 | 1637 | 0.0237 | | 72.0 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.819 | 3.833 | -0.014 | 5197 | 0.0537 | | 16.1 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.819 | 3.833 | -0.014 | 1589253 | 39.0 | 78.0 | 6834 | |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.122 | 4.123 | -0.001 | 2543 | 0.0884 | | 6.1 | |
| D 36 13C2 PFDoA | 615.00 | > 570.00 | 4.113 | 4.123 | -0.010 | 1547449 | 34.7 | 69.3 | 5639 | |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.381 | 4.388 | -0.007 | 6439 | 0.2444 | | 3.5 | |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.650 | 4.630 | 0.020 | 64409 | 1.08 | | 5.5 | |
| | 713.00 | > 169.00 | 4.609 | 4.630 | -0.021 | 4473 | | 14.40(0.00-0.00) | 98.7 | |

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_018.d

Injection Date: 23-Jul-2017 16:30:15

Instrument ID: A8_N

Lims ID: 320-29732-C-3-A

Lab Sample ID: 320-29732-3

Client ID: TP-PFC-019-TPE

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

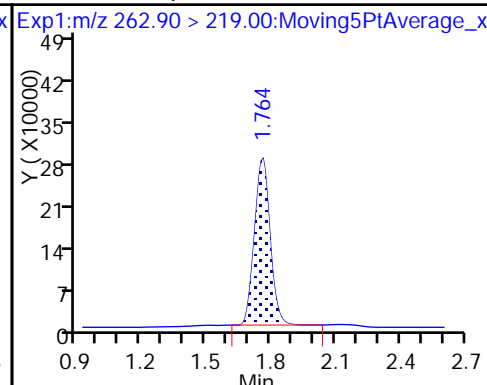
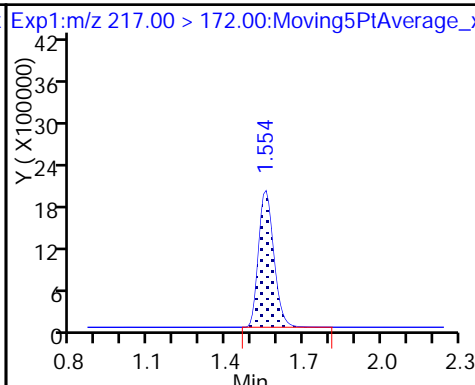
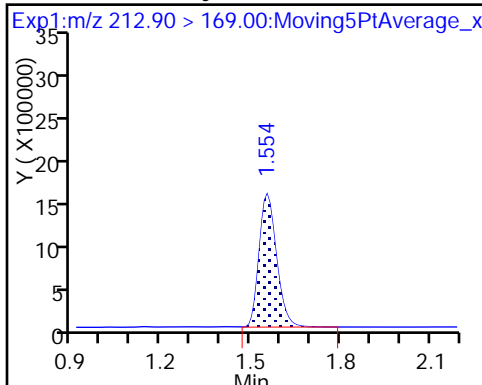
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

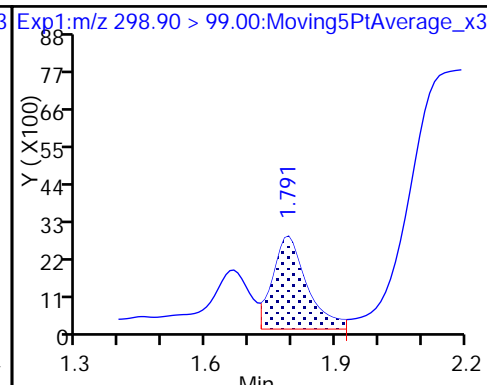
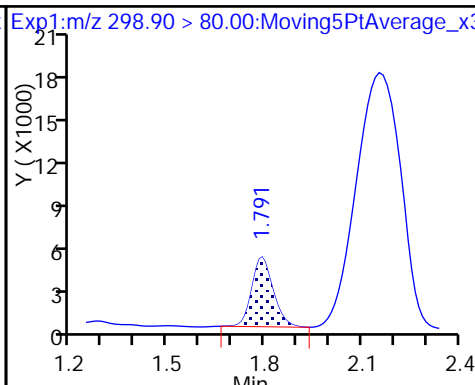
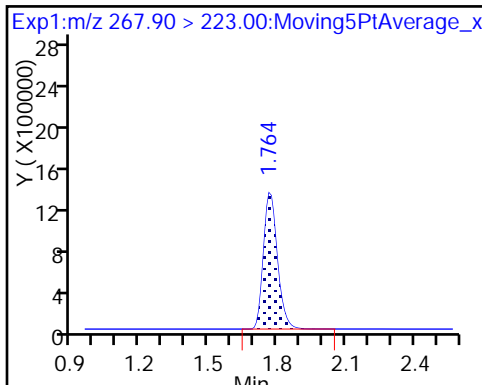
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

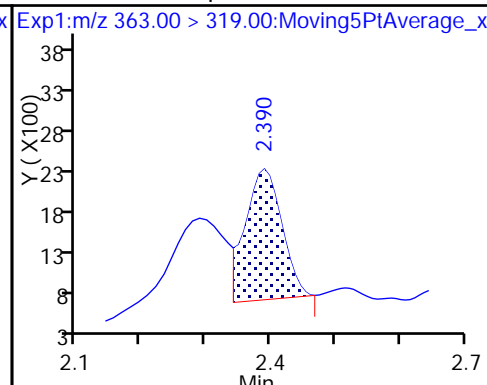
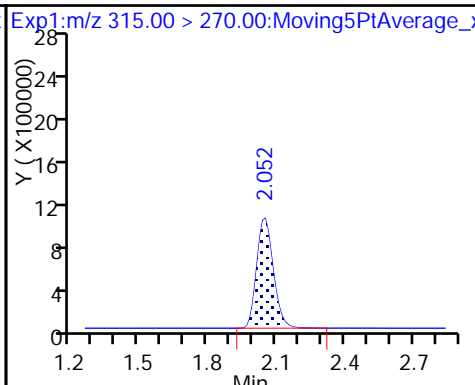
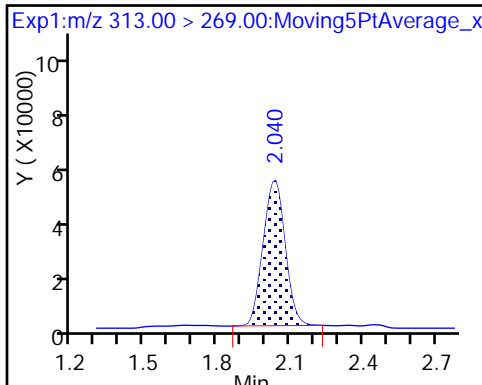
5 Perfluorobutanesulfonic acid



6 Perfluorohexanoic acid

D 7 13C2 PFHxA

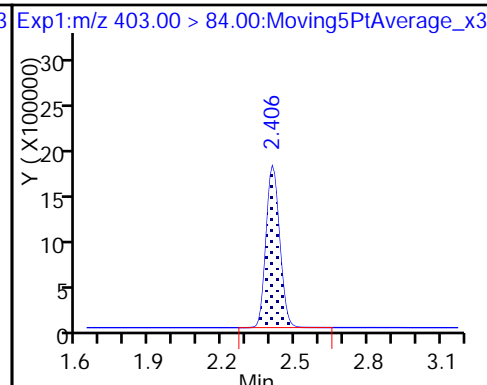
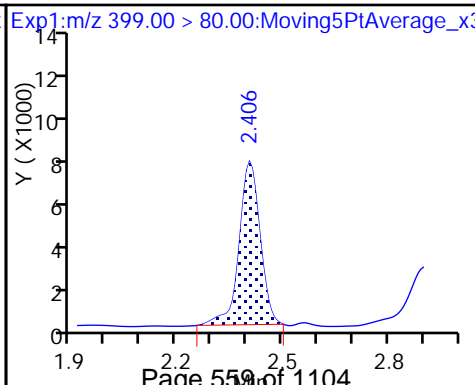
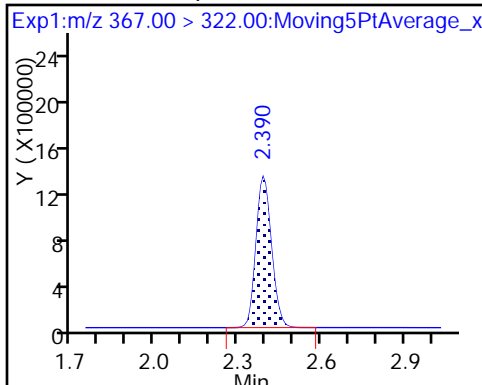
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

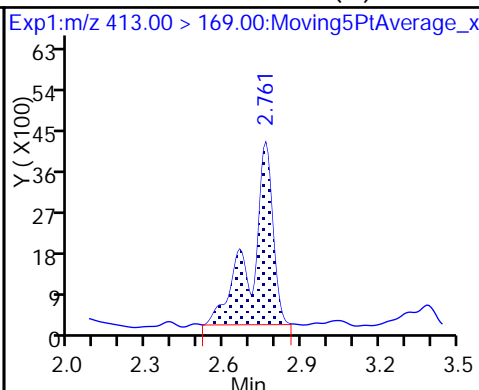
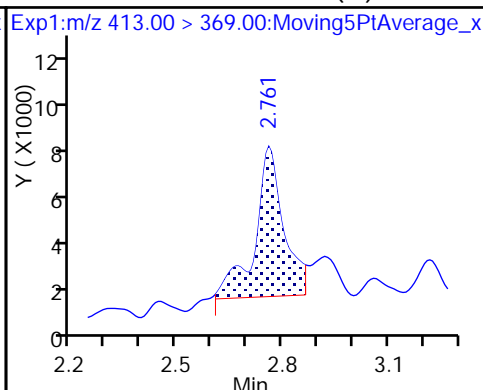
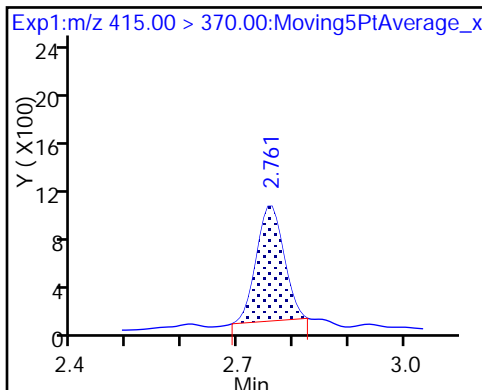
D 11 18O2 PFHxS



* 62 13C2-PFOA

15 Perfluorooctanoic acid (M)

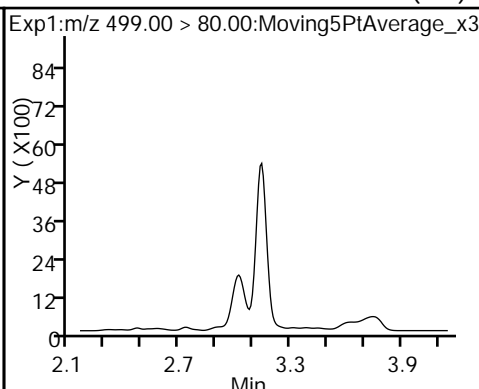
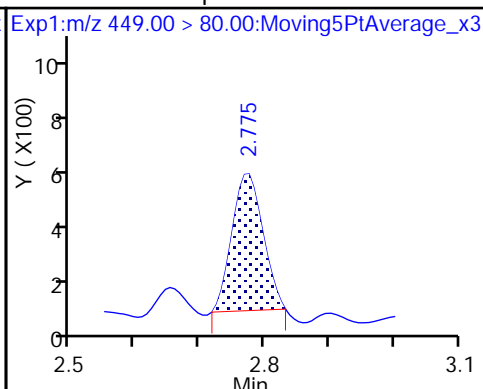
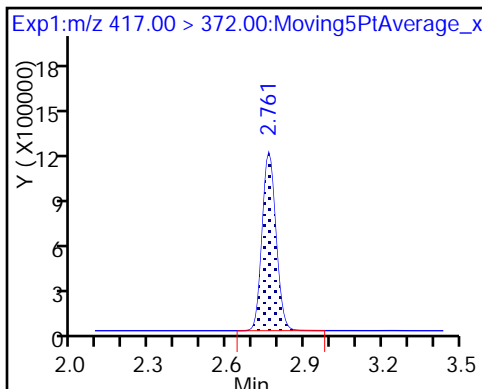
15 Perfluorooctanoic acid (M)



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

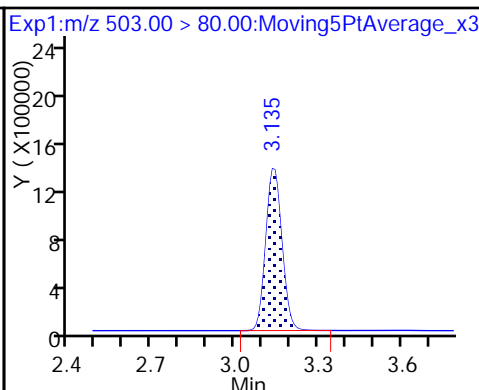
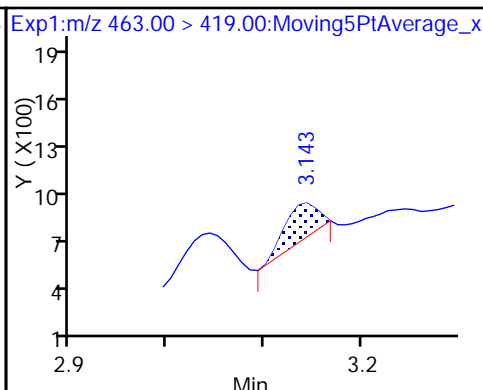
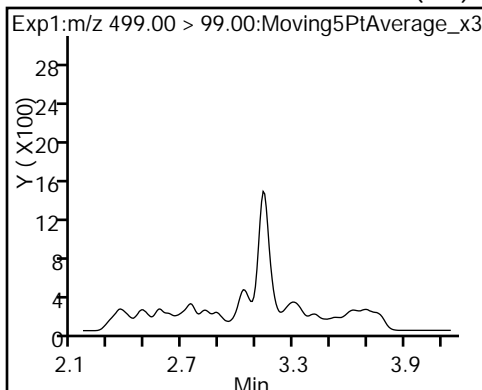
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

20 Perfluorononanoic acid

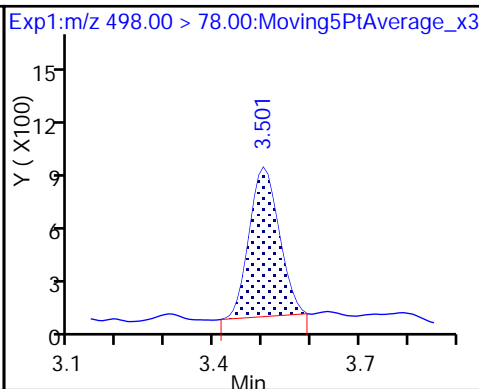
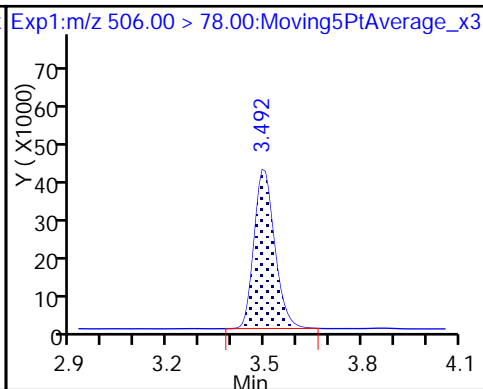
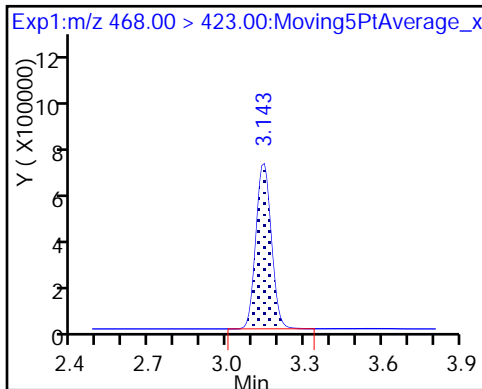
D 18 13C4 PFOS



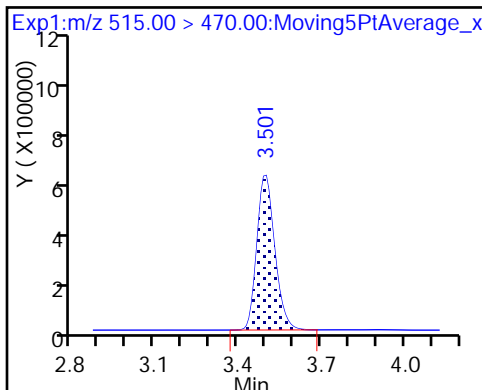
D 19 13C5 PFNA

D 21 13C8 FOSA

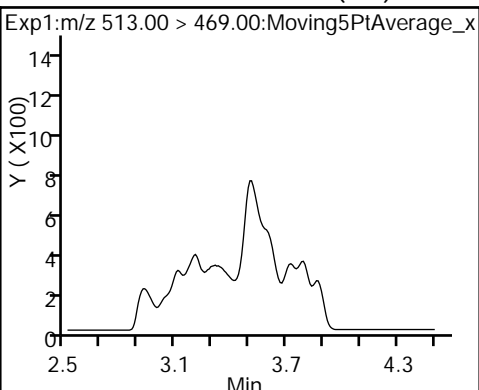
22 Perfluorooctane Sulfonamide



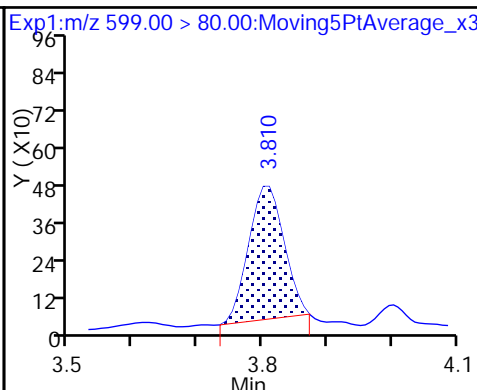
D 23 13C2 PFDA



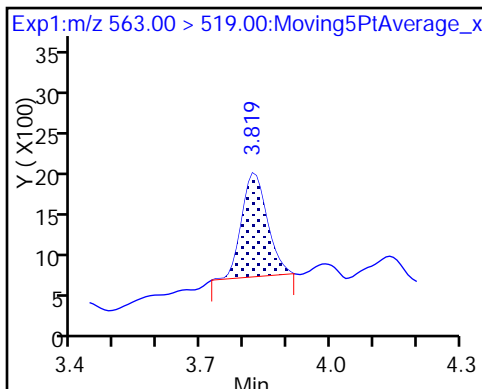
24 Perfluorodecanoic acid (ND)



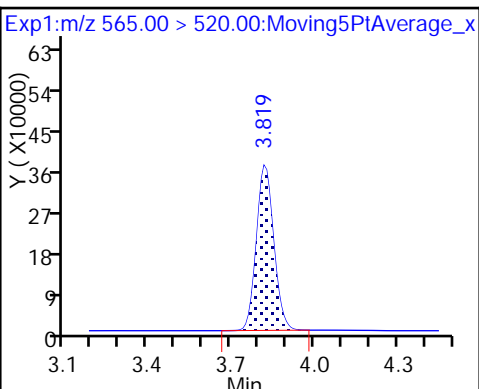
29 Perfluorodecane Sulfonic acid



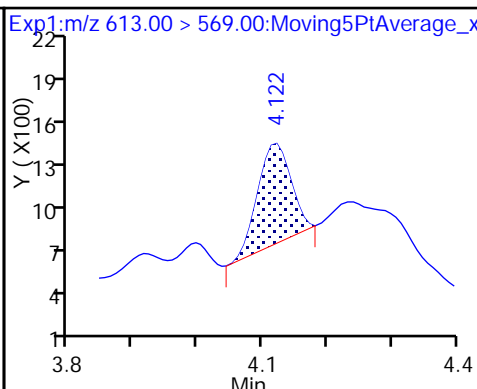
31 Perfluoroundecanoic acid



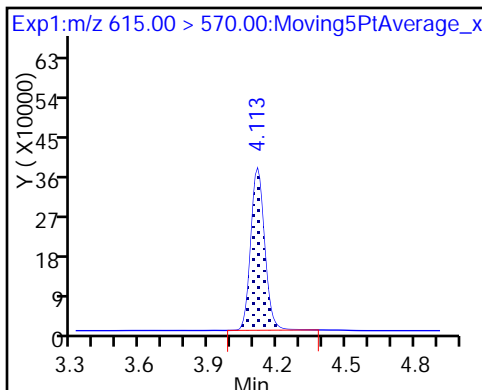
D 30 13C2 PFUa



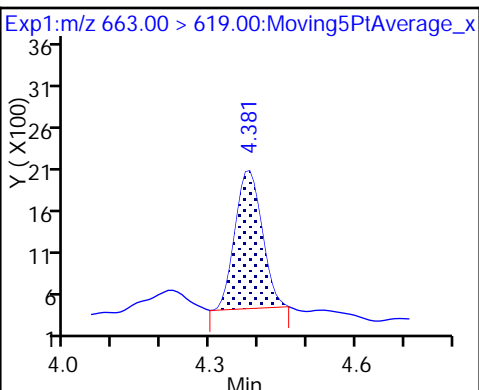
37 Perfluorododecanoic acid



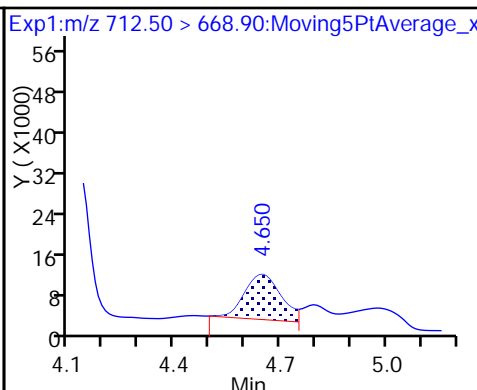
D 36 13C2 PFDaA



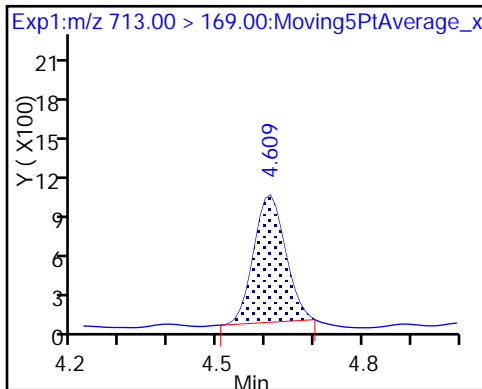
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



TestAmerica Sacramento

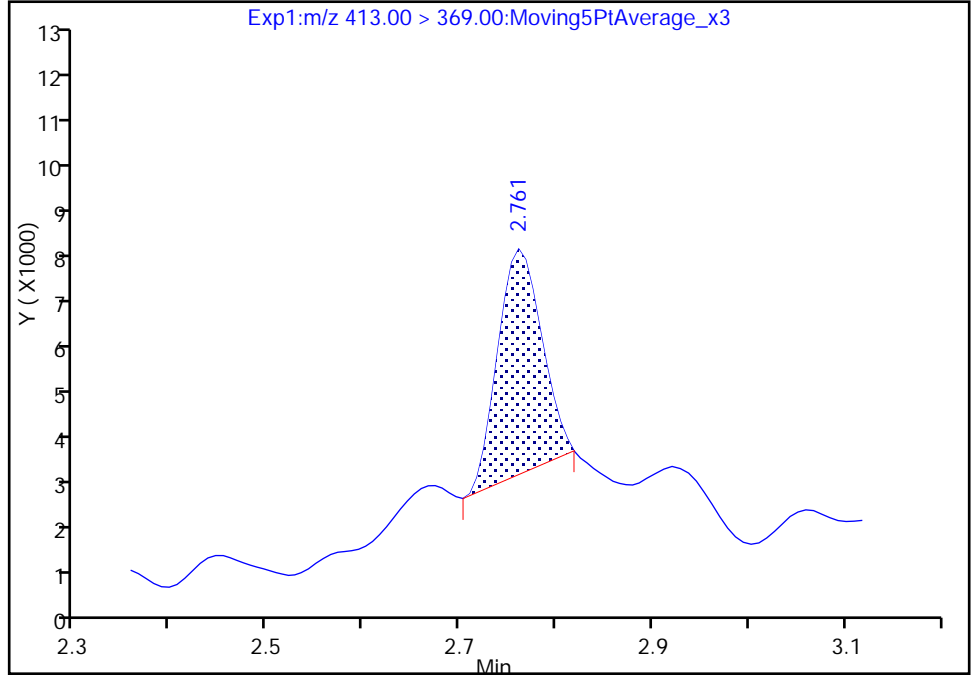
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Injection Date: 23-Jul-2017 16:30:15 Instrument ID: A8_N
Lims ID: 320-29732-C-3-A Lab Sample ID: 320-29732-3
Client ID: TP-PFC-019-TPE
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

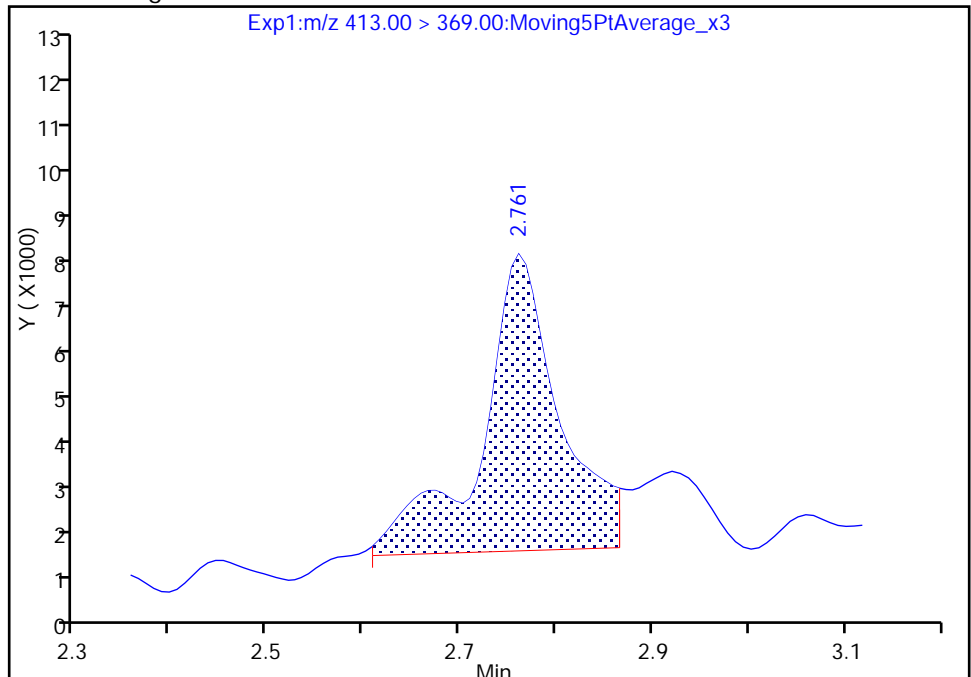
RT: 2.76
Area: 15097
Amount: 0.168505
Amount Units: ng/ml

Processing Integration Results



RT: 2.76
Area: 35522
Amount: 0.396479
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 24-Jul-2017 13:01:36

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

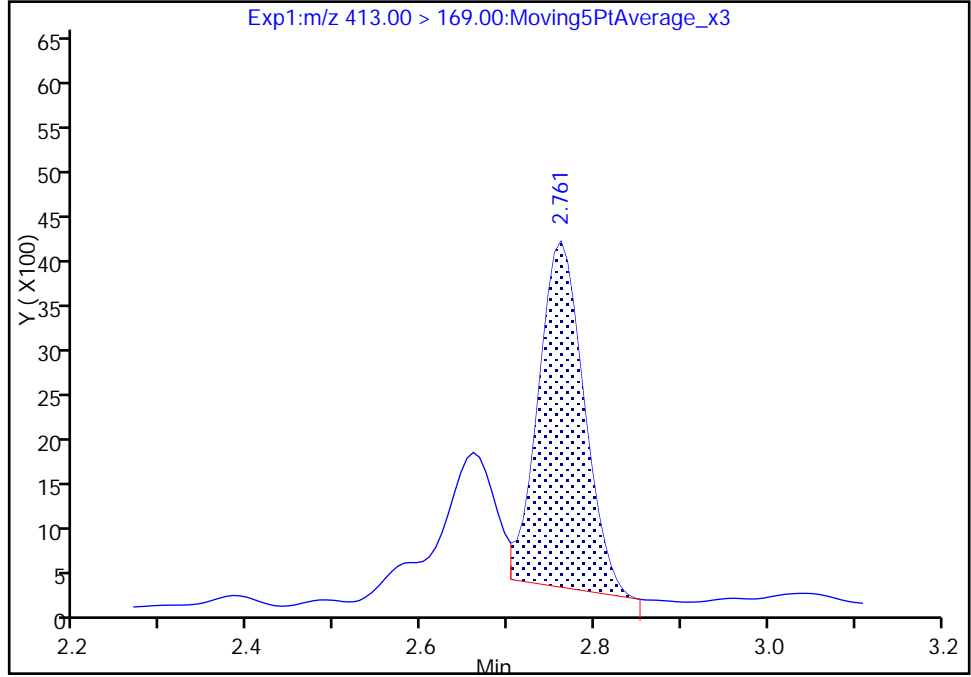
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_018.d
Injection Date: 23-Jul-2017 16:30:15 Instrument ID: A8_N
Lims ID: 320-29732-C-3-A Lab Sample ID: 320-29732-3
Client ID: TP-PFC-019-TPE
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

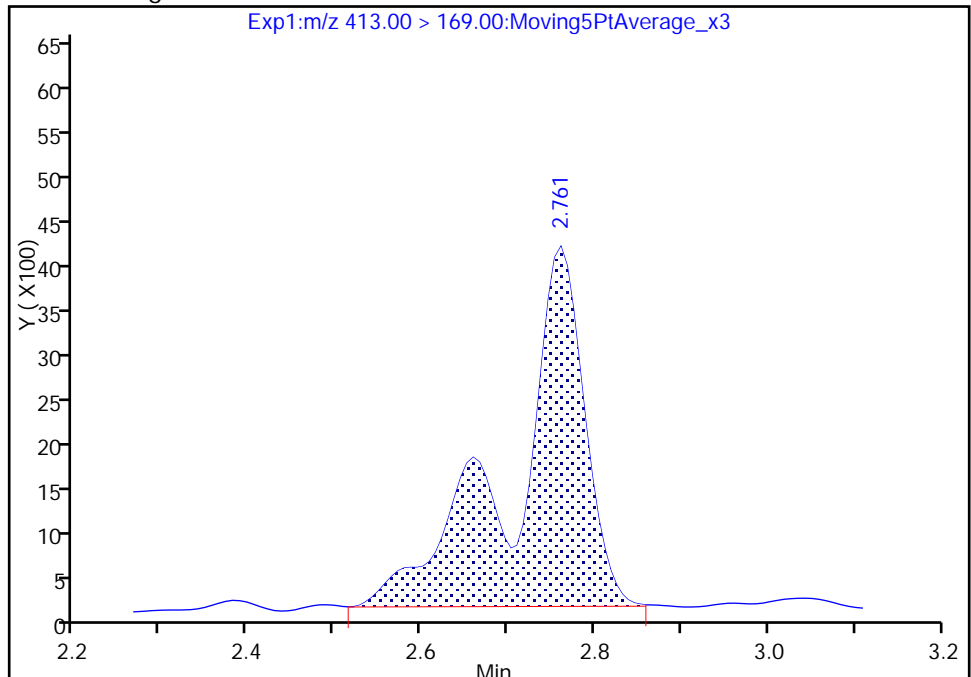
RT: 2.76
Area: 14202
Amount: 0.168505
Amount Units: ng/ml

Processing Integration Results



RT: 2.76
Area: 23454
Amount: 0.396479
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 24-Jul-2017 13:01:47

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE RE Lab Sample ID: 320-29732-3 RE
 Matrix: Water Lab File ID: 2017.07.25B_011.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21
 Extraction Method: 3535 Date Extracted: 07/20/2017 09:15
 Sample wt/vol: 254.6 (mL) Date Analyzed: 07/25/2017 15:19
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175951 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|-------------------------------------|--------|-------|-----|------|------|
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 1.5 | J M Q | 2.5 | 0.98 | 0.39 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00998 | 13C2 PFDaA | 87 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_011.d
 Lims ID: 320-29732-A-3-A
 Client ID: TP-PFC-019-TPE
 Sample Type: Client
 Inject. Date: 25-Jul-2017 15:19:47 ALS Bottle#: 10 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-29732-a-3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:29:47

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.565 | 1.559 | 0.006 | 7026540 | 45.0 | | 90.1 | 22469 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.565 | 1.559 | 0.006 | 1.000 | 5217631 | 42.1 | | 1611 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.775 | 1.778 | -0.003 | | 5396554 | 48.8 | 97.7 | 36133 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.766 | 1.778 | -0.012 | 1.000 | 1379563 | 12.3 | | 1222 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.802 | 1.806 | -0.004 | 1.000 | 27913 | 0.1208 | | 22.7 | |
| | 298.90 > 99.00 | 1.793 | 1.806 | -0.013 | 0.995 | 17190 | 1.62(0.00-0.00) | | 23.3 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.055 | 2.058 | -0.003 | | 4960204 | 49.0 | 98.1 | 24736 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.044 | 2.058 | -0.014 | 1.000 | 310363 | 3.29 | | 620 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.394 | 2.393 | 0.001 | | 5136104 | 61.3 | 123 | 25437 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.394 | 2.393 | 0.001 | 1.000 | 6741 | 0.0639 | | 16.1 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.411 | 2.409 | 0.002 | | 7337720 | 53.4 | 113 | 32303 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.411 | 2.409 | 0.002 | 1.000 | 44595 | 0.2657 | | 76.2 | |
| D 14 13C4 PFOA | 417.00 > 372.00 | 2.759 | 2.756 | 0.003 | | 4618749 | 56.2 | 112 | 23857 | |
| * 62 13C2-PFOA | 415.00 > 370.00 | 2.752 | 2.756 | -0.004 | | 3091 | 50.0 | | 125 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.759 | 2.756 | 0.003 | 1.000 | 34612 | 0.3512 | | | 12.4 | |
| 413.00 > 169.00 | 2.759 | 2.756 | 0.003 | 1.000 | 25951 | | 1.33(0.90-1.10) | | 109 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.133 | 3.131 | 0.002 | | 3105058 | 47.2 | | 94.5 | 16656 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.133 | 3.131 | 0.002 | | 5150147 | 47.6 | | 99.6 | 17241 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.034 | 3.140 | -0.106 | 1.000 | 1234 | 0.0195 | | | 2.8 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.484 | 3.487 | -0.003 | | 103974 | 0.5688 | | 1.1 | 1843 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.493 | 3.497 | -0.004 | | 3039801 | 54.4 | | 109 | 9361 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.493 | 3.497 | -0.004 | 1.000 | 2347 | 0.0394 | | | 18.2 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.801 | 3.803 | -0.002 | 1.000 | 2977 | 0.0444 | | | 119 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.818 | 3.822 | -0.004 | 1.000 | 11684 | 0.1595 | | | 27.5 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.818 | 3.822 | -0.004 | | 2147777 | 52.7 | | 105 | 6857 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.115 | 4.116 | -0.001 | 1.000 | 7523 | 0.2084 | | | 16.2 | |
| D 36 13C2 PFDaA | | | | | | | | | | |
| 615.00 > 570.00 | 4.115 | 4.116 | -0.001 | | 1942537 | 43.5 | | 87.0 | 3683 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.375 | 4.380 | -0.005 | 1.000 | 8454 | 0.2556 | | | 4.0 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | |
| 712.50 > 668.90 | 4.642 | 4.614 | 0.028 | 1.000 | 55698 | 0.7459 | | | 4.4 | M |
| 713.00 > 169.00 | 4.612 | 4.614 | -0.002 | 0.993 | 5853 | | 9.52(0.00-0.00) | | 125 | M |

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_011.d

Injection Date: 25-Jul-2017 15:19:47

Instrument ID: A8_N

Lims ID: 320-29732-A-3-A

Lab Sample ID: 320-29732-3

Client ID: TP-PFC-019-TPE

Operator ID: SACINSTLCMS01

ALS Bottle#: 10

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

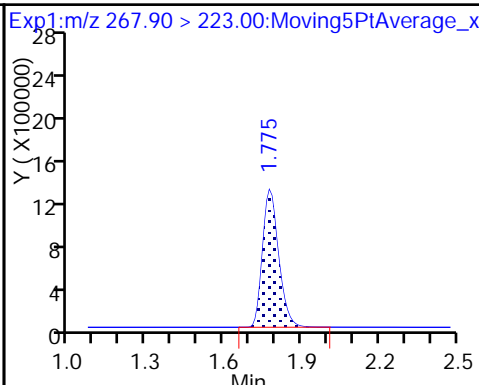
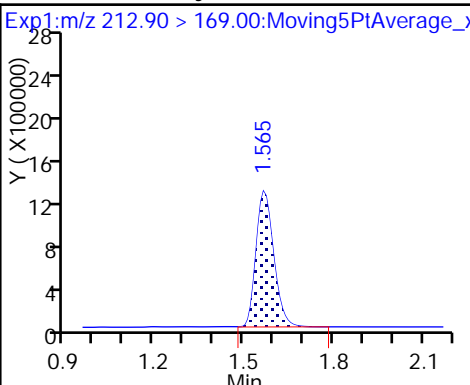
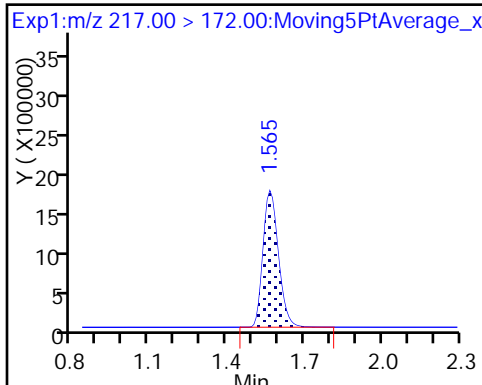
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

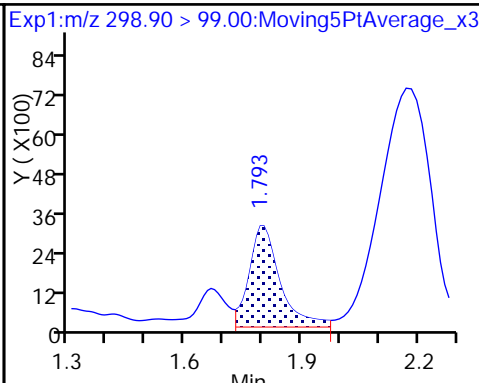
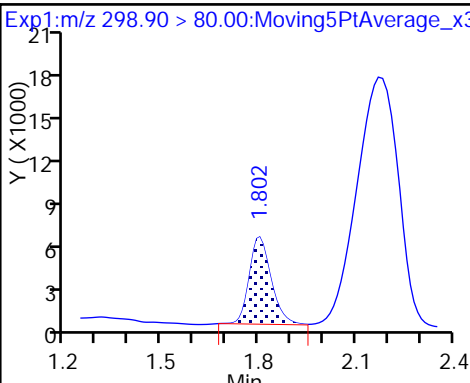
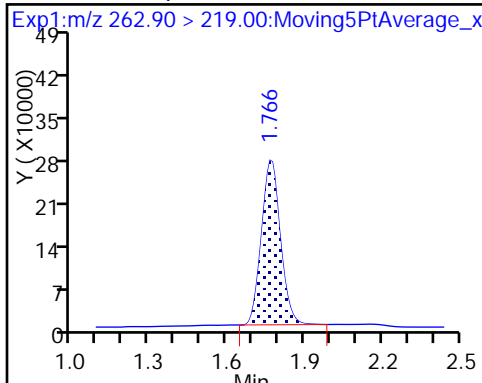
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

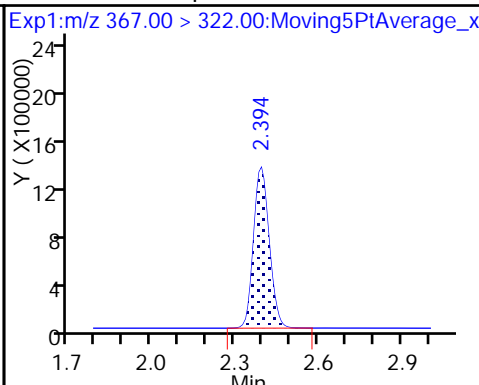
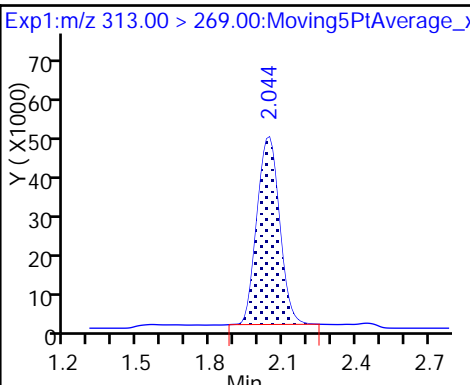
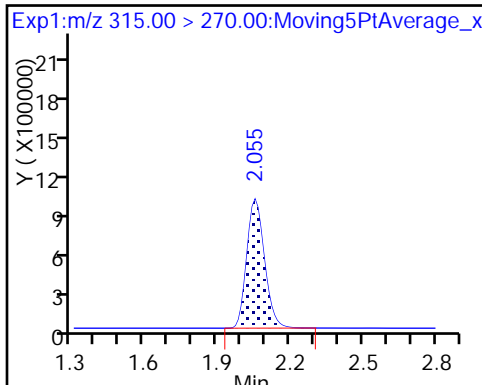
5 Perfluorobutanesulfonic acid



D 7 13C2 PFHxA

6 Perfluorohexanoic acid

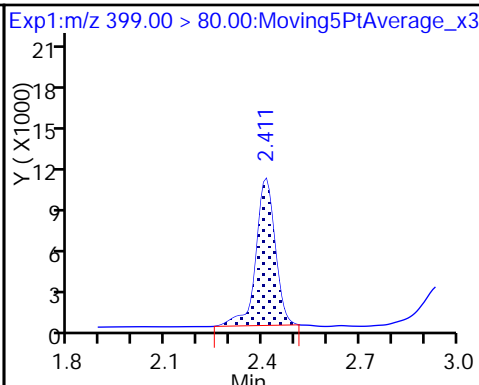
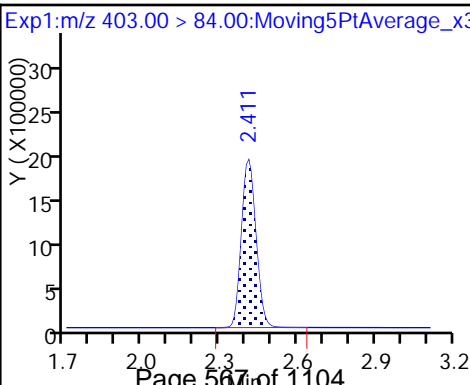
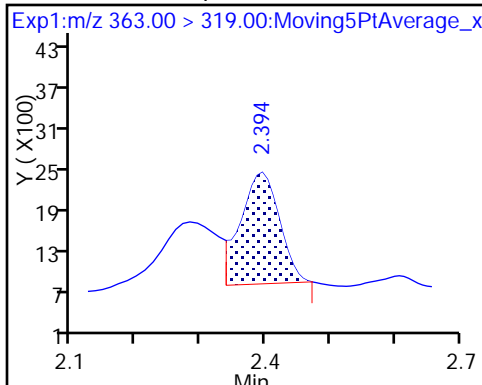
D 9 13C4-PFHpA



10 Perfluoroheptanoic acid

D 11 18O2 PFHxS

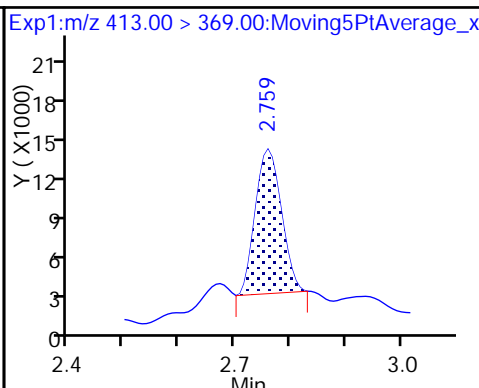
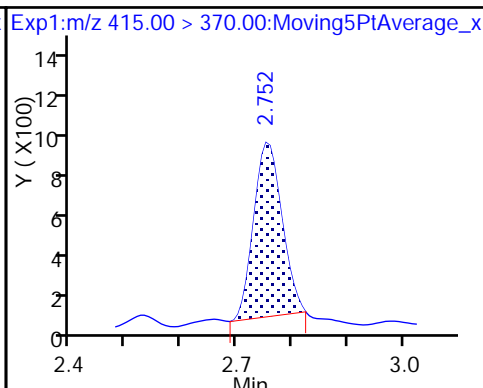
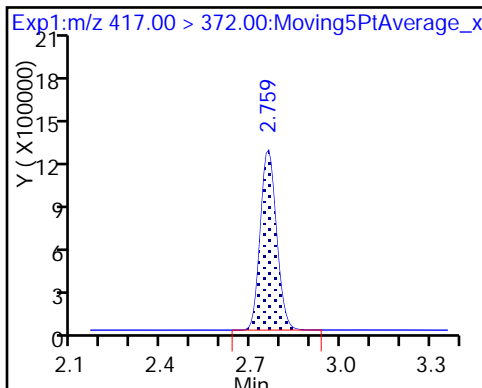
8 Perfluorohexanesulfonic acid



D 14 13C4 PFOA

* 62 13C2-PFOA

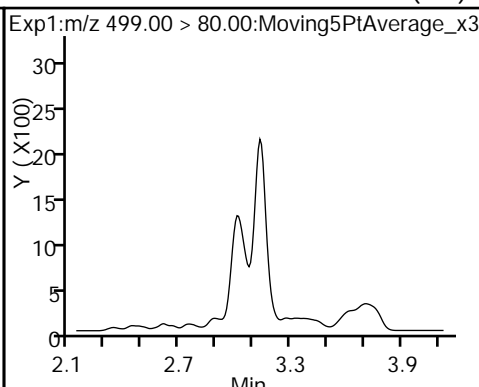
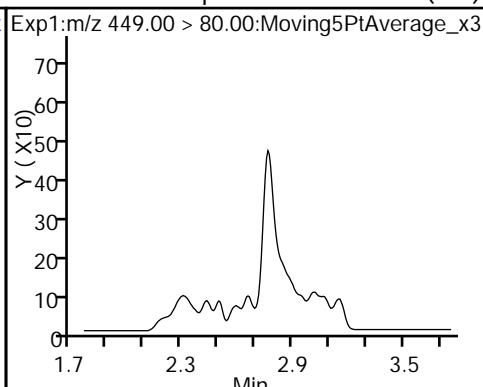
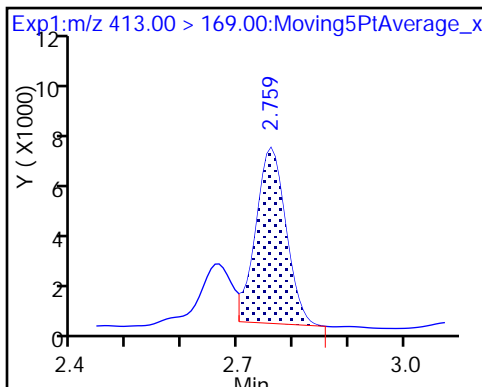
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid (ND)

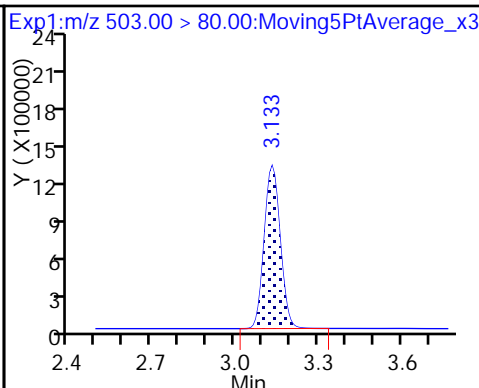
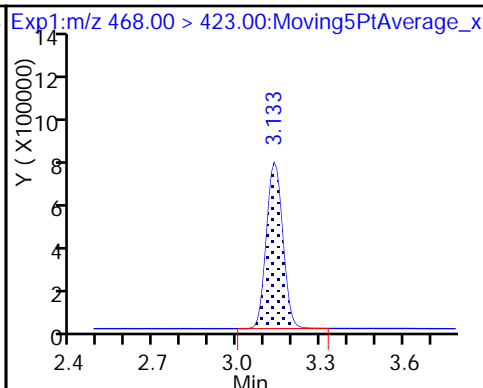
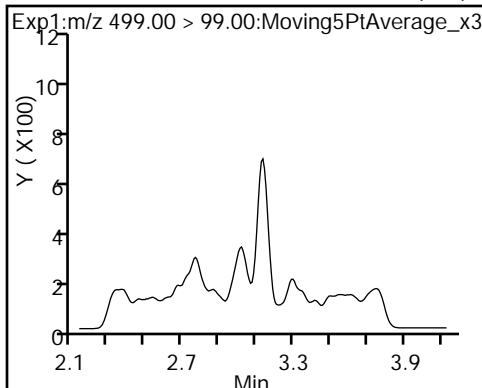
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

D 19 13C5 PFNA

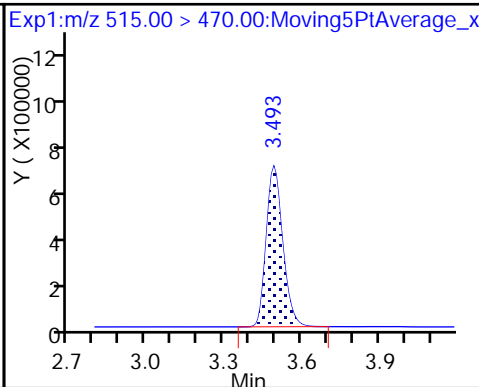
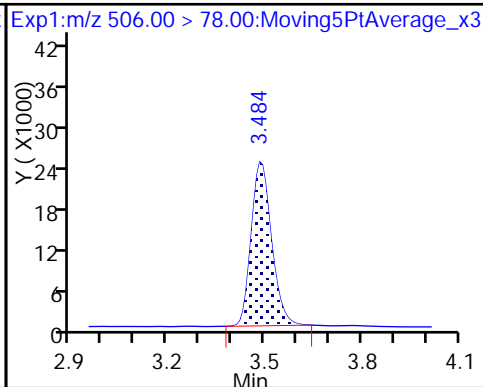
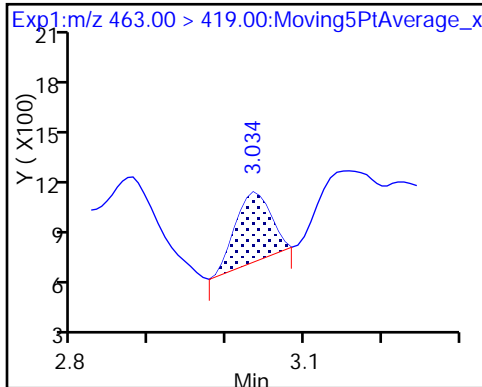
D 18 13C4 PFOS



20 Perfluorononanoic acid

D 21 13C8 FOSA

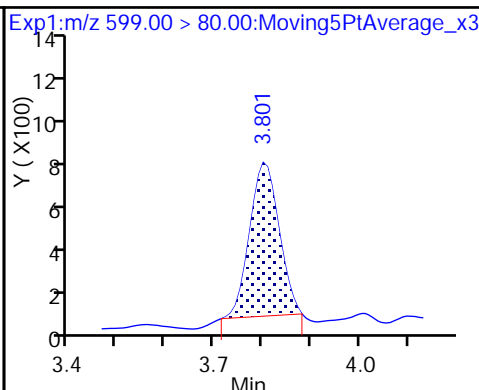
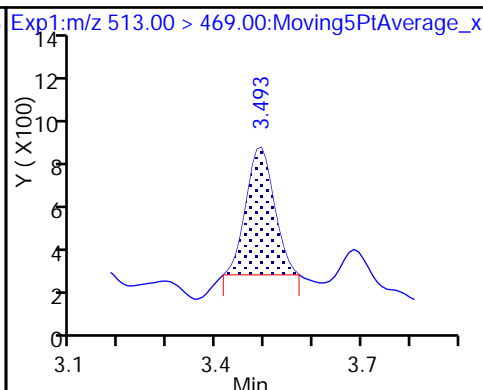
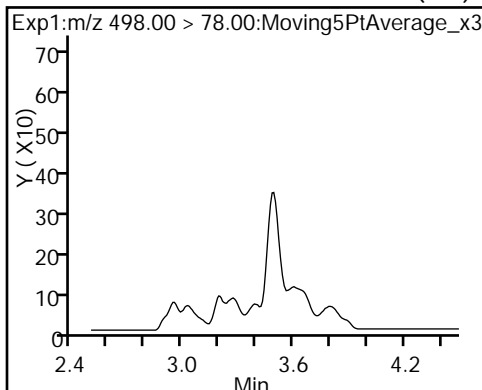
D 23 13C2 PFDA



22 Perfluorooctane Sulfonamide (ND)

24 Perfluorodecanoic acid

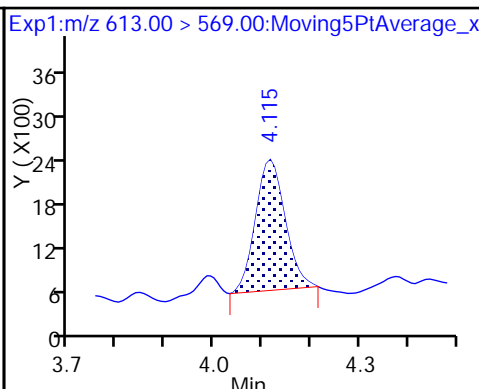
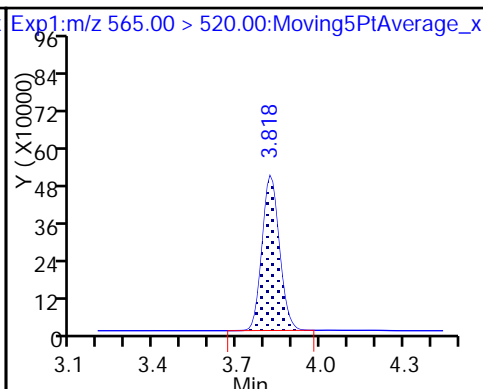
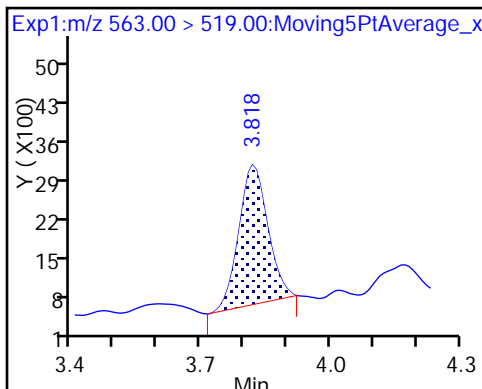
29 Perfluorodecane Sulfonic acid



31 Perfluoroundecanoic acid

D 30 13C2 PFUoA

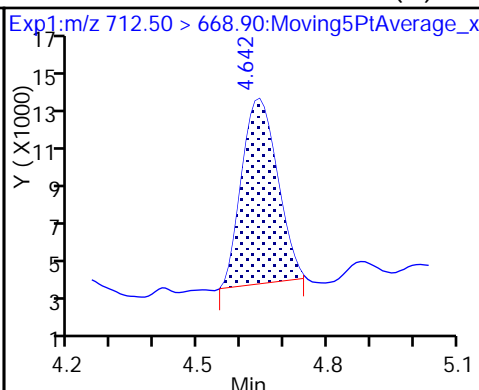
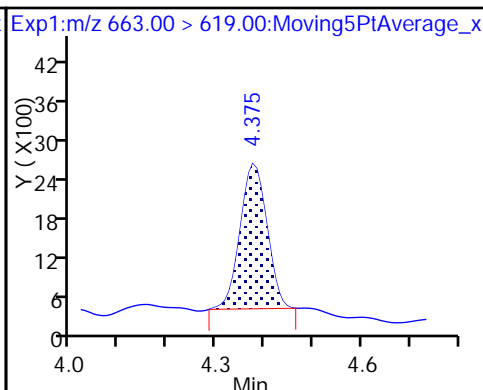
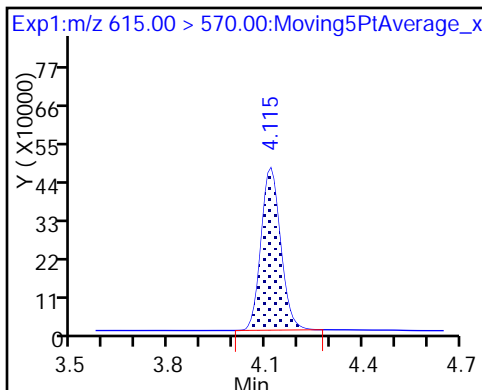
37 Perfluorododecanoic acid



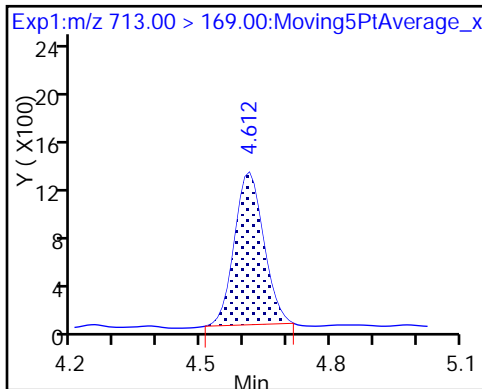
D 36 13C2 PFDoA

41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid (M)



42 Perfluorotetradecanoic acid



TestAmerica Sacramento

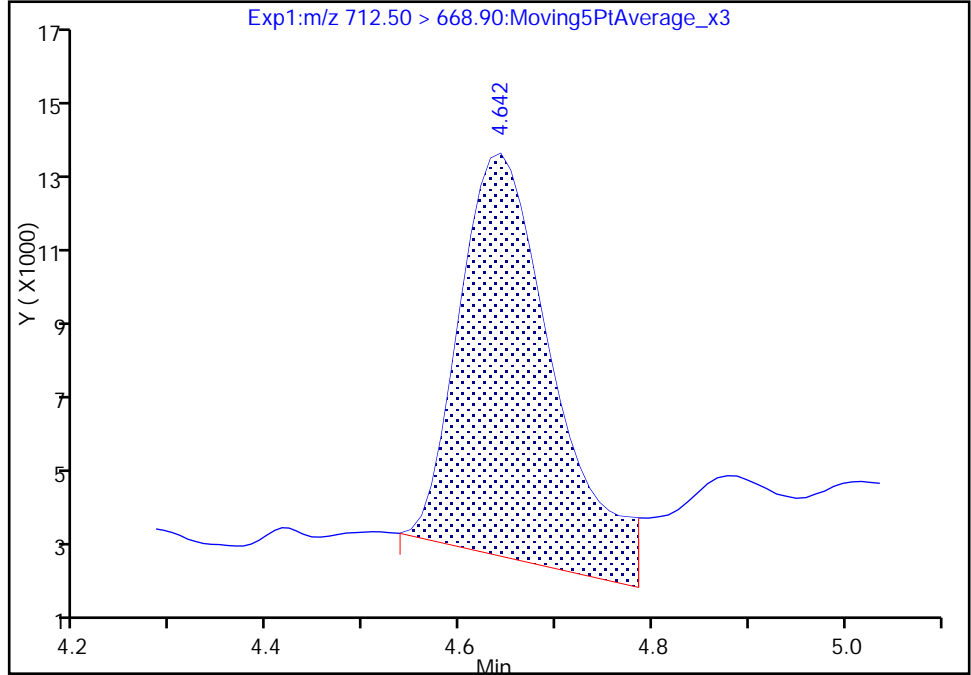
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Injection Date: 25-Jul-2017 15:19:47 Instrument ID: A8_N
Lims ID: 320-29732-A-3-A Lab Sample ID: 320-29732-3
Client ID: TP-PFC-019-TPE
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

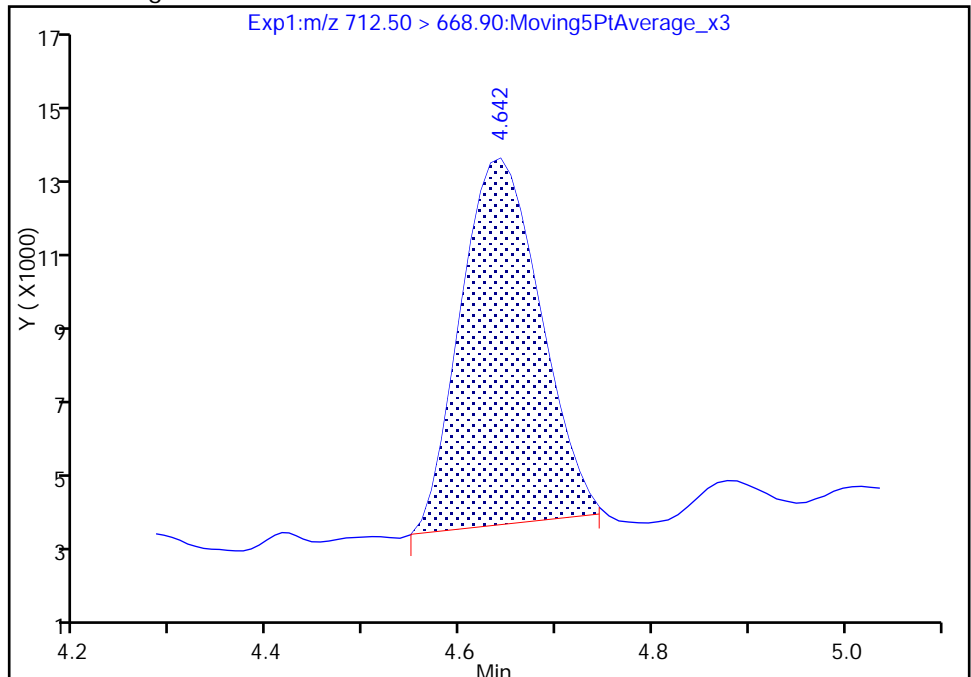
RT: 4.64
Area: 71998
Amount: 0.964181
Amount Units: ng/ml

Processing Integration Results



RT: 4.64
Area: 55698
Amount: 0.745895
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 26-Jul-2017 11:29:35
Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE-D Lab Sample ID: 320-29732-4
 Matrix: Water Lab File ID: 2017.07.21C_019.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 258.4 (mL) Date Analyzed: 07/21/2017 21:06
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|------|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 82 | | 2.4 | 0.97 | 0.44 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 24 | | 2.4 | 1.9 | 0.96 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 6.4 | | 2.4 | 1.9 | 0.76 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 1.9 | U | 2.4 | 1.9 | 0.78 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 1.9 | U M | 2.4 | 1.9 | 0.72 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 1.9 | U | 2.4 | 1.9 | 0.63 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 0.97 | U | 2.4 | 0.97 | 0.43 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 1.9 | U | 2.4 | 1.9 | 0.72 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 1.9 | U | 2.4 | 1.9 | 0.57 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 1.9 | U | 2.4 | 1.9 | 0.53 |
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 0.97 | U | 2.4 | 0.97 | 0.39 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 1.9 | U | 2.4 | 1.9 | 0.89 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 1.9 | U | 2.4 | 1.9 | 0.84 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 1.9 | U | 2.4 | 1.9 | 0.69 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 2.9 | U | 3.9 | 2.9 | 1.2 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 2.9 | U | 3.9 | 2.9 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 1.9 | U | 39 | 1.9 | 0.62 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE-D Lab Sample ID: 320-29732-4
 Matrix: Water Lab File ID: 2017.07.21C_019.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 258.4 (mL) Date Analyzed: 07/21/2017 21:06
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 0.3 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 96 | | 25-150 |
| STL00993 | 13C2 PFHxA | 98 | | 25-150 |
| STL00990 | 13C4 PFOA | 111 | | 25-150 |
| STL00995 | 13C5 PFNA | 91 | | 25-150 |
| STL00996 | 13C2 PFDA | 85 | | 25-150 |
| STL00997 | 13C2 PFUnA | 67 | | 25-150 |
| STL00998 | 13C2 PFDoA | 70 | | 25-150 |
| STL00994 | 18O2 PFHxS | 106 | | 25-150 |
| STL00991 | 13C4 PFOS | 100 | | 25-150 |
| STL01892 | 13C4-PFHpA | 118 | | 25-150 |
| STL01893 | 13C5 PFPeA | 98 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_019.d
 Lims ID: 320-29732-A-4-A
 Client ID: TP-PFC-019-TPE-D
 Sample Type: Client
 Inject. Date: 21-Jul-2017 21:06:07 ALS Bottle#: 16 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-29732-a-4-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 16:31:26 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:06:29

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.537 | 1.537 | -0.001 | 8636797 | 48.0 | | 96.0 | 22592 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.537 | 1.537 | -0.001 | 6685274 | 42.5 | | | 2274 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.736 | 1.727 | 0.009 | 5857967 | 49.0 | | 98.0 | 36241 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.727 | 1.737 | -0.009 | 1467902 | 12.6 | | | 1176 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.755 | 1.755 | -0.001 | 27462 | 0.1134 | | | 20.9 | |
| | 298.90 > 99.00 | 1.755 | 1.755 | -0.001 | 16601 | | 1.65(0.00-0.00) | | 20.4 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 1.994 | 1.994 | 0.0 | 5414023 | 49.0 | | 98.1 | 25844 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 1.983 | 1.994 | -0.011 | 335960 | 3.31 | | | 584 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.317 | 2.316 | 0.001 | 5754274 | 59.1 | | 118 | 21435 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.309 | 2.316 | -0.007 | 11401 | 0.0982 | | | 19.8 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.325 | 2.324 | 0.001 | 34482 | 0.1978 | | | 42.0 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.325 | 2.332 | -0.007 | 8056880 | 50.2 | | 106 | 23423 | |
| * 62 13C2-PFOA | 415.00 > 370.00 | 2.655 | 2.656 | -0.001 | 2969 | 50.0 | | | 101 | |
| D 14 13C4 PFOA | 417.00 > 372.00 | 2.662 | 2.656 | 0.006 | 4869917 | 55.5 | | 111 | 23900 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 15 Perfluorooctanoic acid | | | | | | | | | | M |
| 413.00 > 369.00 | 2.662 | 2.663 | -0.001 | 1.000 | 28031 | 0.2751 | | | 6.7 | M |
| 413.00 > 169.00 | 2.662 | 2.663 | -0.001 | 1.000 | 21039 | | 1.33(0.90-1.10) | | 85.6 | M |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.670 | 2.670 | 0.0 | 1.000 | 2298 | 0.0165 | | | 66.0 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.026 | 3.029 | -0.003 | 1.000 | 1495 | 0.0237 | | | 2.9 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.026 | 3.029 | -0.003 | | 5655596 | 47.9 | | 100 | 25690 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.026 | 3.029 | -0.003 | | 3148816 | 45.4 | | 90.9 | 18046 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.381 | 3.380 | 0.001 | 1.000 | 3020 | 0.0628 | | | 17.0 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.381 | 3.380 | 0.001 | | 2569669 | 42.5 | | 84.9 | 11825 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.389 | 3.388 | 0.001 | | 31279 | 0.1593 | | 0.3 | 540 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.709 | 3.709 | 0.0 | 1.000 | 4782 | -0.0143 | | | 12.0 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.709 | 3.709 | 0.0 | | 1399133 | 33.3 | | 66.6 | 5881 | |
| D 36 13C2 PFDoA | | | | | | | | | | |
| 615.00 > 570.00 | 3.995 | 4.004 | -0.009 | | 1525906 | 35.0 | | 70.1 | 3923 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.002 | 4.004 | -0.002 | 1.000 | 1228 | 0.0426 | | | 4.0 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.265 | 4.266 | -0.001 | 1.000 | 2191 | 0.0843 | | | 1.5 | |

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_019.d

Injection Date: 21-Jul-2017 21:06:07

Instrument ID: A8_N

Lims ID: 320-29732-A-4-A

Lab Sample ID: 320-29732-4

Client ID: TP-PFC-019-TPE-D

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

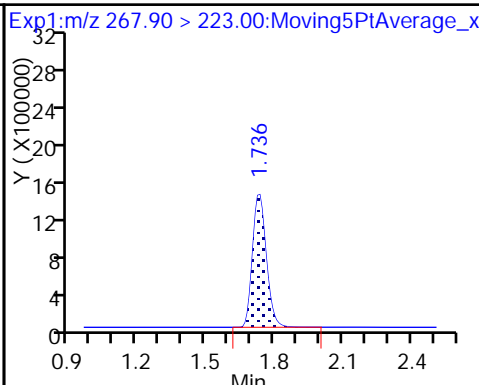
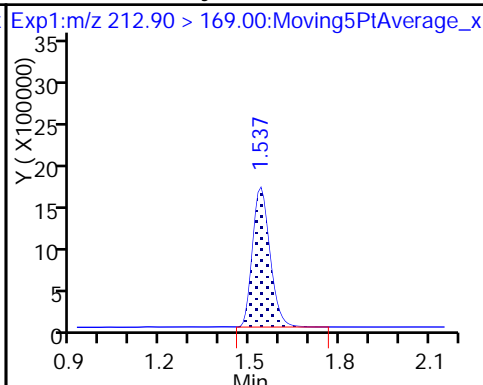
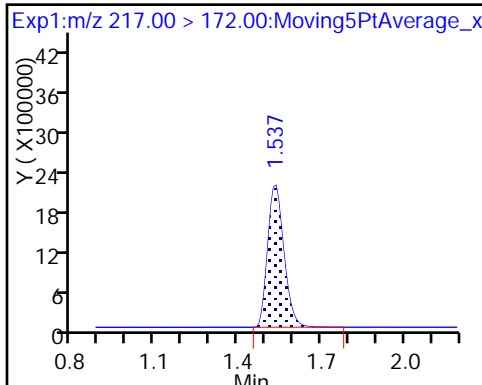
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

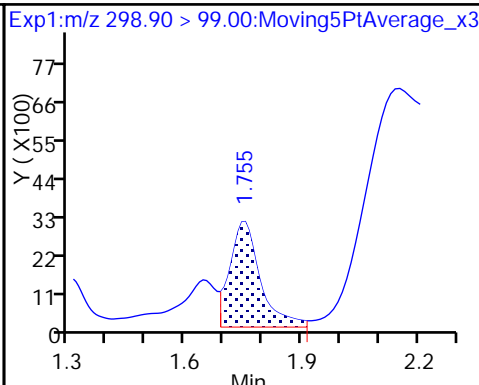
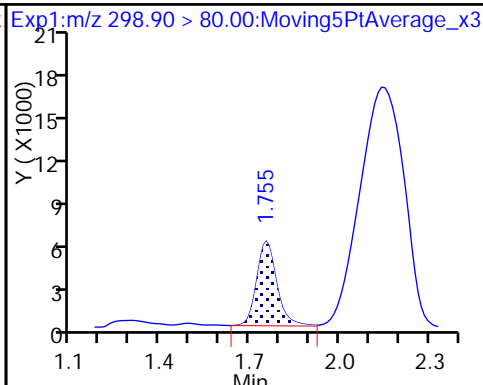
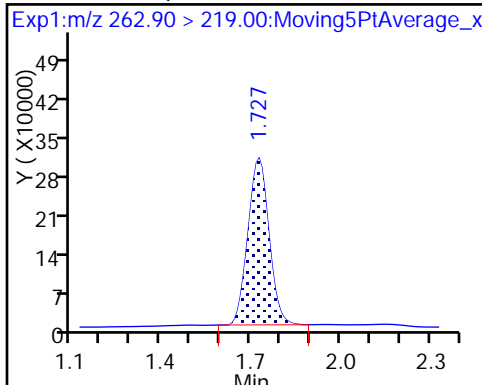
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

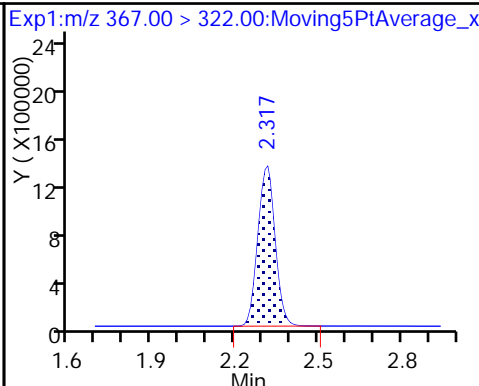
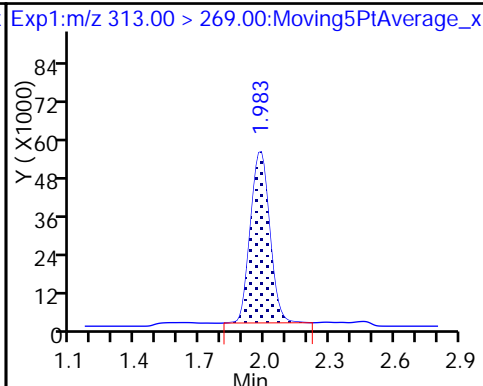
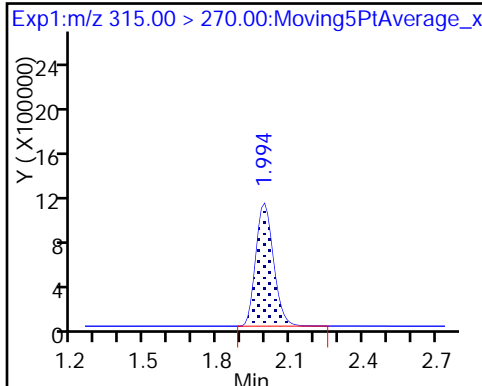
5 Perfluorobutanesulfonic acid



D 7 13C2 PFHxA

6 Perfluorohexanoic acid

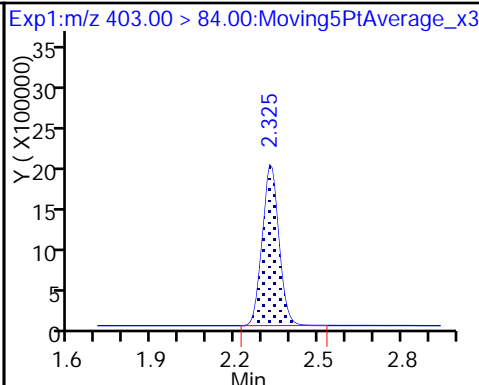
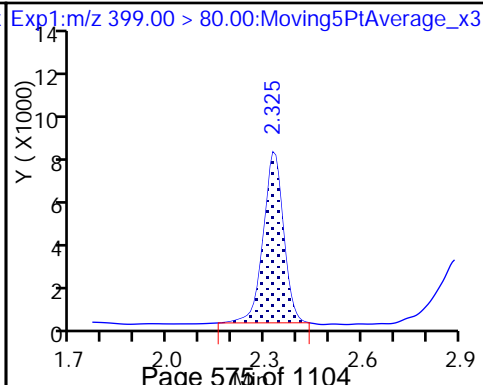
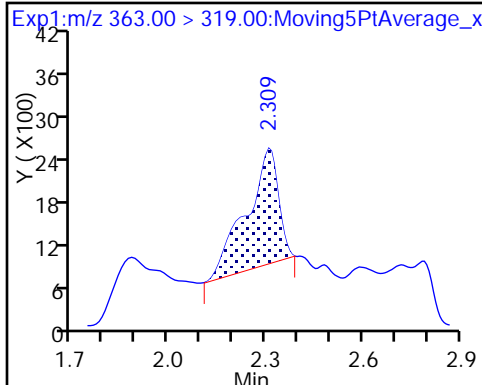
D 9 13C4-PFHpA



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

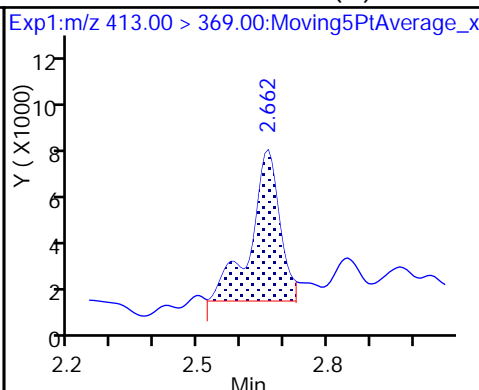
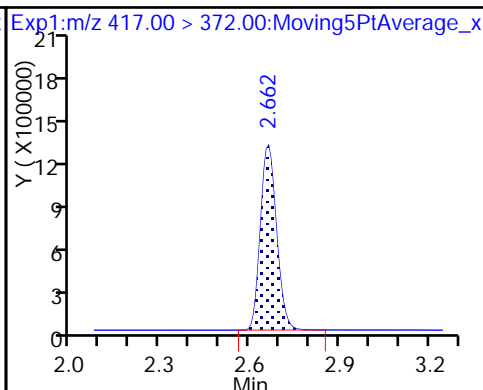
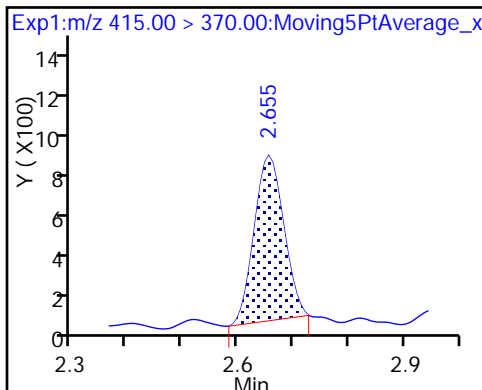
D 11 18O2 PFHxS



* 62 13C2-PFOA

D 14 13C4 PFOA

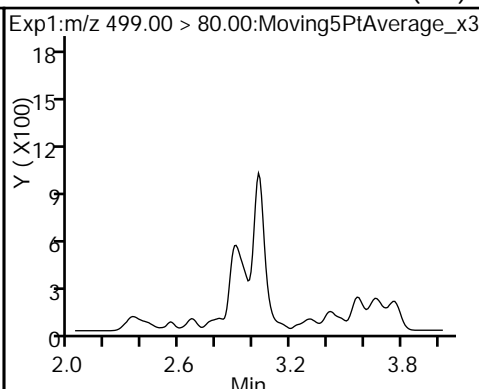
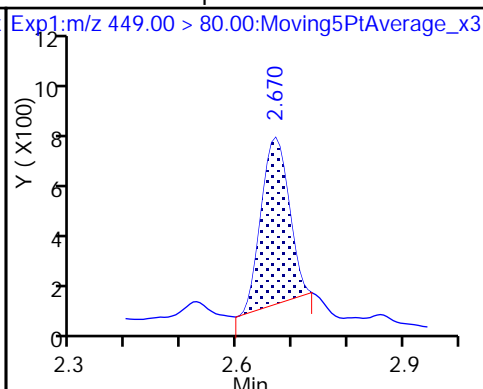
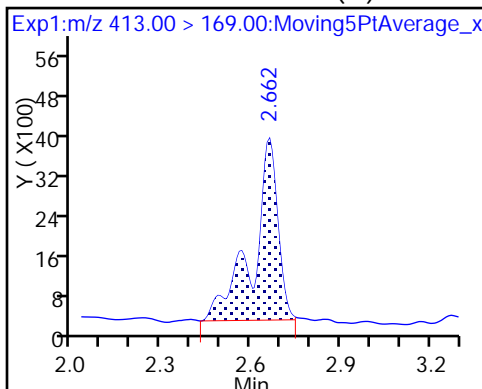
15 Perfluorooctanoic acid (M)



15 Perfluorooctanoic acid (M)

16 Perfluoroheptanesulfonic Acid

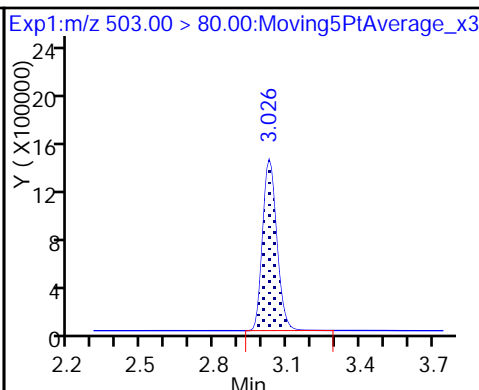
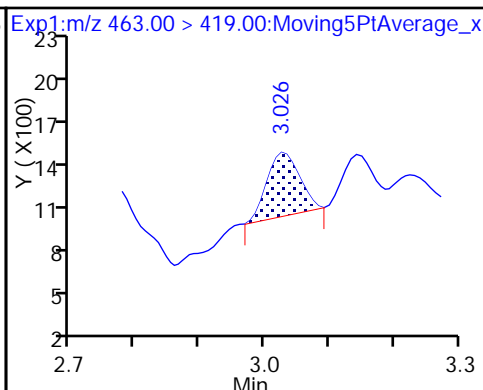
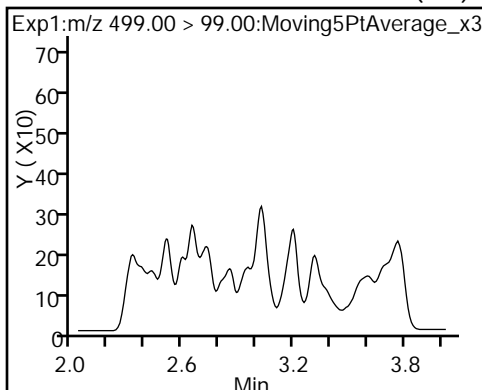
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

20 Perfluorononanoic acid

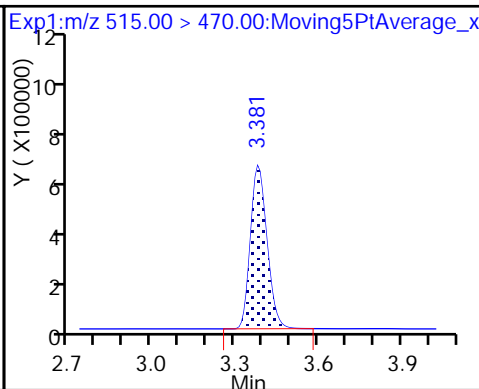
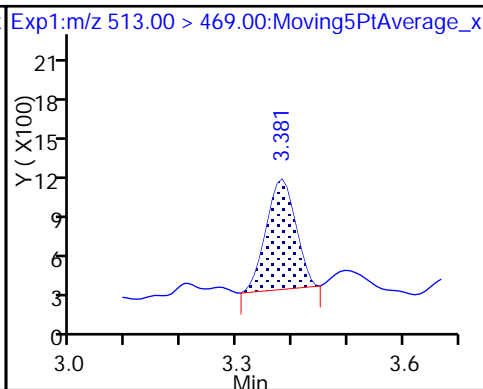
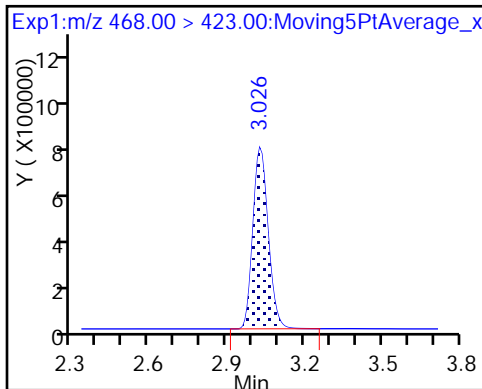
D 18 13C4 PFOS



D 19 13C5 PFNA

24 Perfluorodecanoic acid

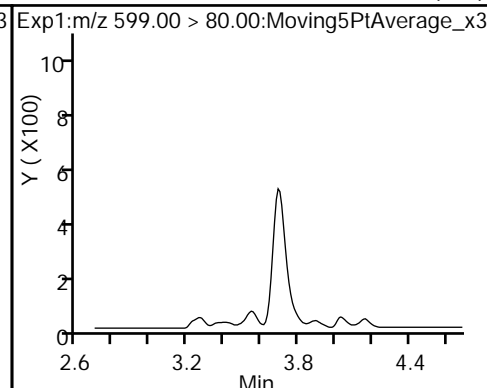
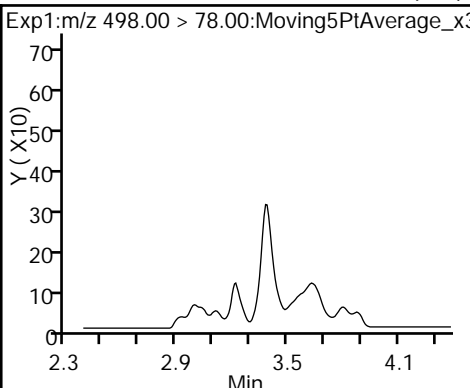
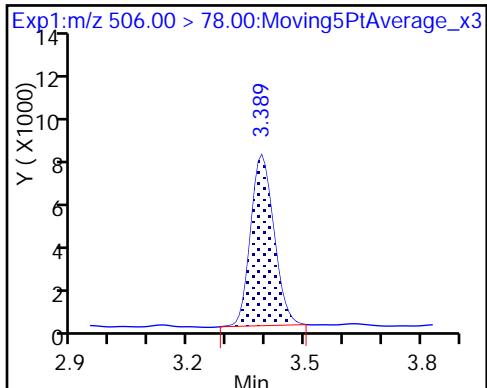
D 23 13C2 PFDA



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide (ND)

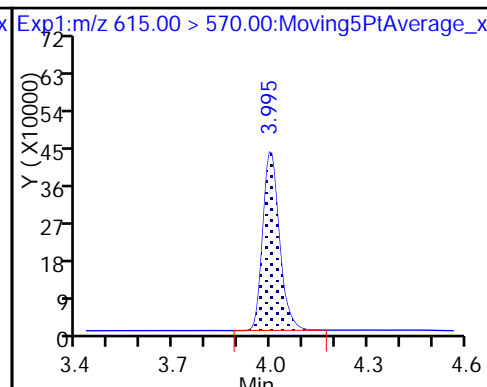
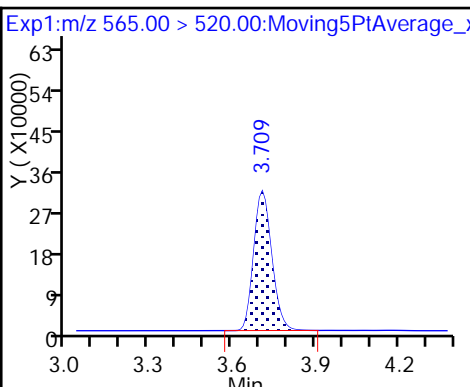
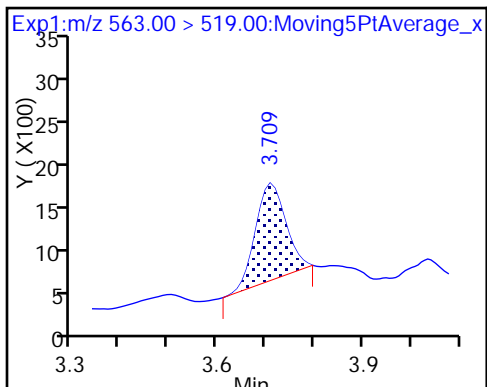
29 Perfluorodecane Sulfonic acid (ND)



31 Perfluoroundecanoic acid

D 30 13C2 PFUnA

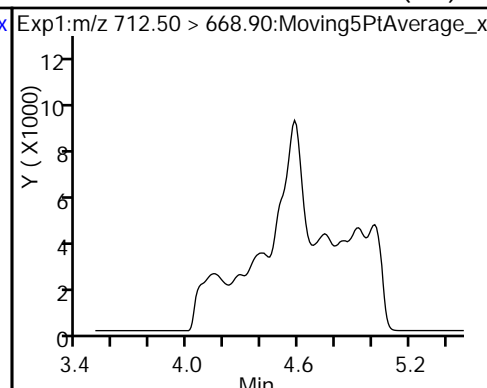
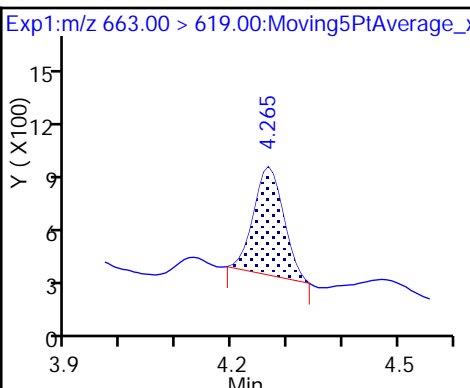
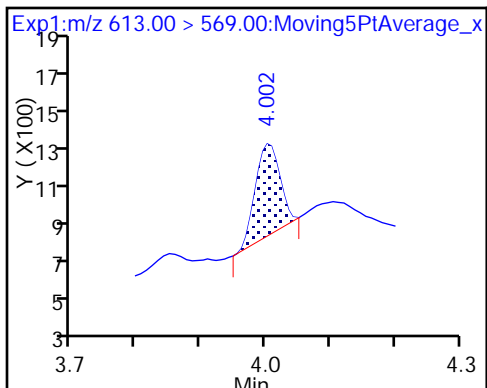
D 36 13C2 PFDoA



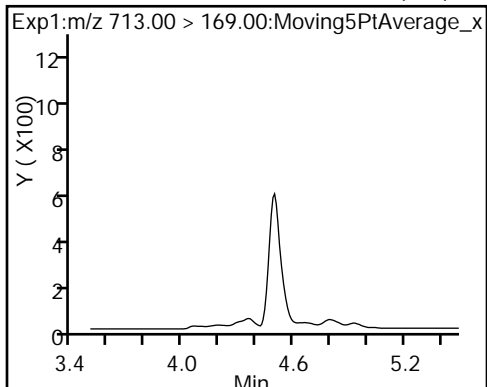
37 Perfluorododecanoic acid

41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



TestAmerica Sacramento

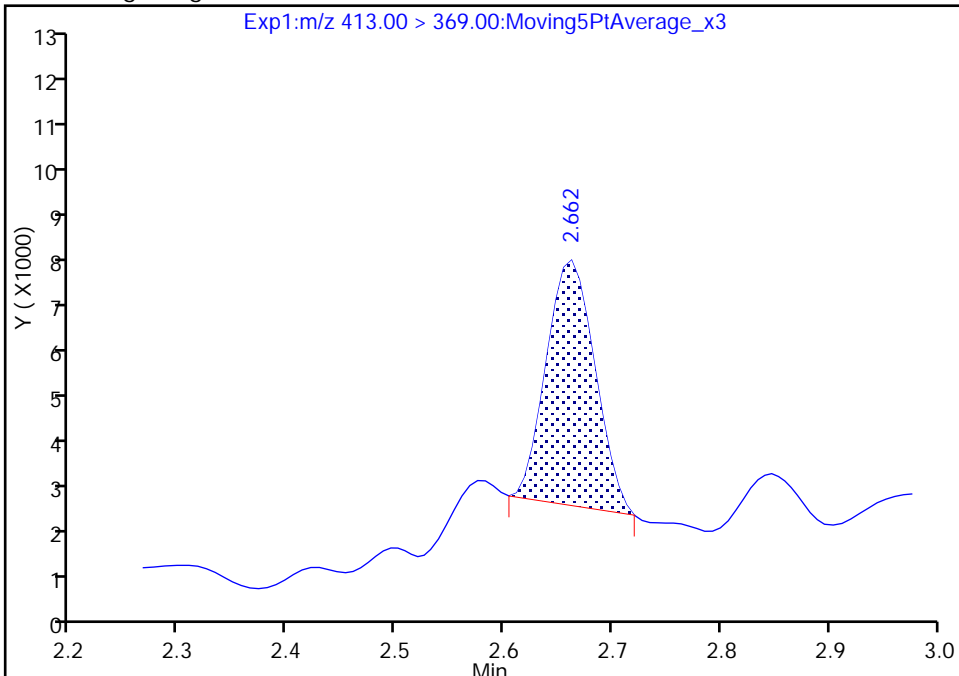
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Injection Date: 21-Jul-2017 21:06:07 Instrument ID: A8_N
Lims ID: 320-29732-A-4-A Lab Sample ID: 320-29732-4
Client ID: TP-PFC-019-TPE-D
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

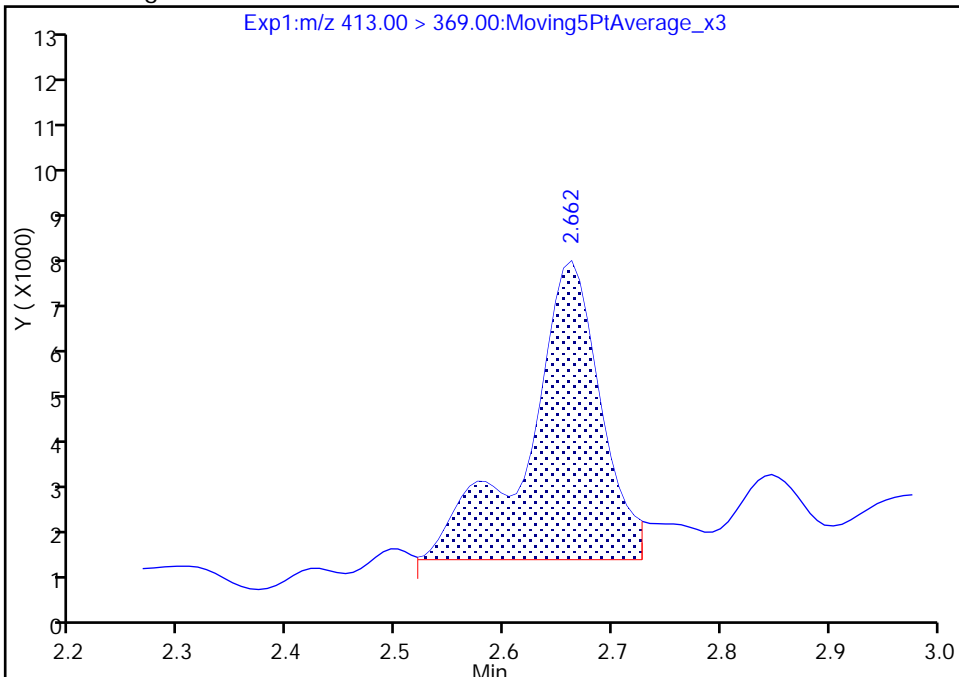
RT: 2.66
Area: 15251
Amount: 0.149659
Amount Units: ng/ml

Processing Integration Results



RT: 2.66
Area: 28031
Amount: 0.275069
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 24-Jul-2017 16:05:56
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

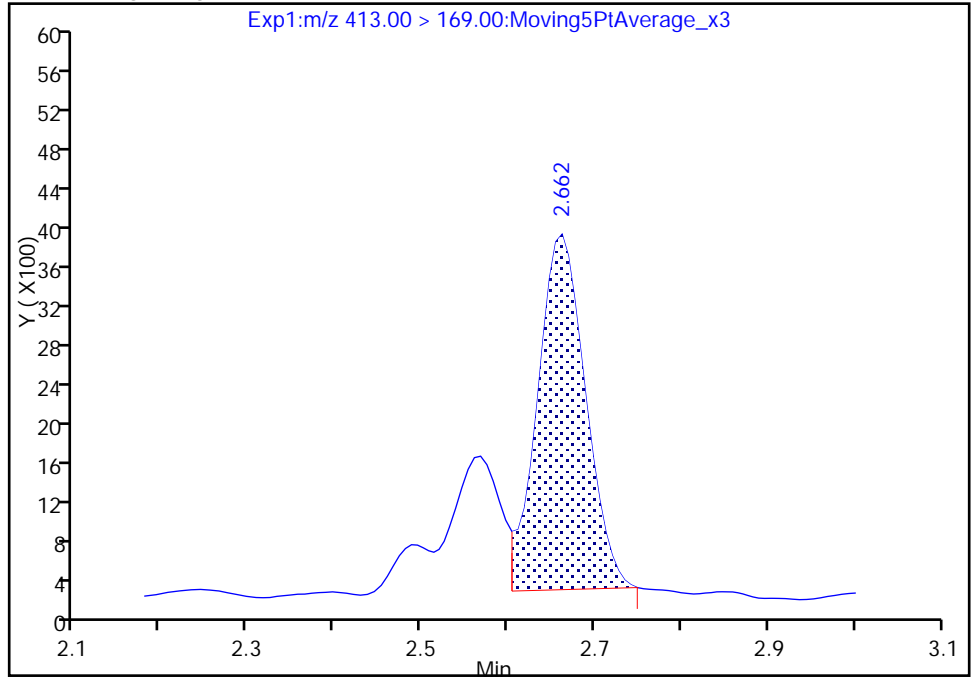
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_019.d
Injection Date: 21-Jul-2017 21:06:07 Instrument ID: A8_N
Lims ID: 320-29732-A-4-A Lab Sample ID: 320-29732-4
Client ID: TP-PFC-019-TPE-D
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

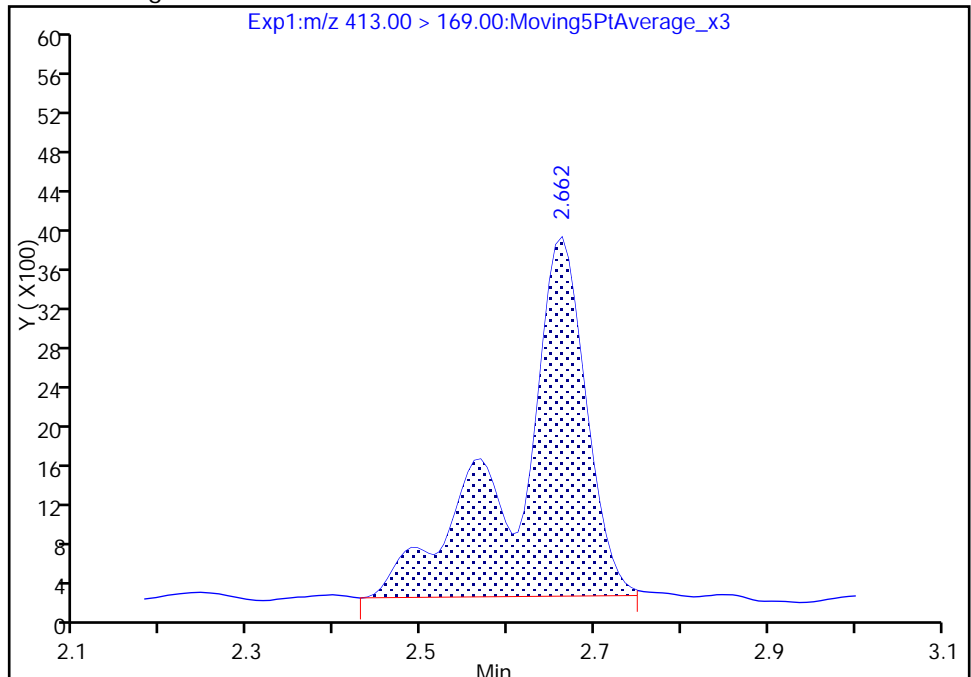
RT: 2.66
Area: 13934
Amount: 0.149659
Amount Units: ng/ml

Processing Integration Results



RT: 2.66
Area: 21039
Amount: 0.275069
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE-D RE Lab Sample ID: 320-29732-4 RE
 Matrix: Water Lab File ID: 2017.07.27C_014.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00
 Extraction Method: 3535 Date Extracted: 07/25/2017 09:58
 Sample wt/vol: 245.5 (mL) Date Analyzed: 07/27/2017 22:18
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 176487 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|------------------------------------|--------|-----|-----|-----|------|
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.0 | U H | 41 | 2.0 | 0.65 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 2 | Q | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_014.d
 Lims ID: 320-29732-C-4-A
 Client ID: TP-PFC-019-TPE-D
 Sample Type: Client
 Inject. Date: 27-Jul-2017 22:18:32 ALS Bottle#: 36 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-29732-c-4-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 28-Jul-2017 14:14:28 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: chandrasenas Date: 28-Jul-2017 11:41:06

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | | | | | | | | | | |
| 212.90 > 169.00 | 1.563 | 1.565 | -0.002 | 1.000 | 6280373 | 40.9 | | | 1998 | |
| D 1 13C4 PFBA | | | | | | | | | | |
| 217.00 > 172.00 | 1.563 | 1.565 | -0.002 | | 8715084 | 55.9 | | 112 | 19345 | |
| 4 Perfluoropentanoic acid | | | | | | | | | | |
| 262.90 > 219.00 | 1.772 | 1.784 | -0.012 | 1.000 | 1532769 | 11.7 | | | 1392 | |
| D 3 13C5-PFPeA | | | | | | | | | | |
| 267.90 > 223.00 | 1.782 | 1.784 | -0.002 | | 6272214 | 56.8 | | 114 | 27400 | |
| 5 Perfluorobutanesulfonic acid | | | | | | | | | | |
| 298.90 > 80.00 | 1.800 | 1.812 | -0.012 | 1.000 | 23476 | 0.0982 | | | 17.1 | M |
| 298.90 > 99.00 | 1.800 | 1.812 | -0.012 | 1.000 | 7316 | | 3.21(0.00-0.00) | | 12.4 | M |
| 6 Perfluorohexanoic acid | | | | | | | | | | |
| 313.00 > 269.00 | 2.040 | 2.054 | -0.014 | 1.000 | 340785 | 3.01 | | | 532 | |
| D 7 13C2 PFHxA | | | | | | | | | | |
| 315.00 > 270.00 | 2.051 | 2.054 | -0.003 | | 5936075 | 58.7 | | 117 | 16429 | |
| 10 Perfluoroheptanoic acid | | | | | | | | | | |
| 363.00 > 319.00 | 2.374 | 2.385 | -0.011 | 1.000 | 12269 | 0.1016 | | | 10.9 | M |
| D 9 13C4-PFHpA | | | | | | | | | | |
| 367.00 > 322.00 | 2.374 | 2.385 | -0.011 | | 5881752 | 70.2 | | 140 | 14911 | |
| 8 Perfluorohexanesulfonic acid | | | | | | | | | | |
| 399.00 > 80.00 | 2.390 | 2.401 | -0.011 | 1.000 | 32816 | 0.1890 | | | 42.5 | |
| D 11 18O2 PFHxS | | | | | | | | | | |
| 403.00 > 84.00 | 2.390 | 2.401 | -0.011 | | 7592560 | 55.2 | | 117 | 22953 | |
| * 62 13C2-PFOA | | | | | | | | | | |
| 415.00 > 370.00 | 2.725 | 2.733 | -0.008 | | 3566 | 50.0 | | | 115 | |
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.732 | 2.740 | -0.008 | 1.000 | 19001 | 0.1650 | | | 6.3 | M |
| 413.00 > 169.00 | 2.732 | 2.740 | -0.008 | 1.000 | 21196 | | 0.90(0.90-1.10) | | 101 | M |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|-----------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|-------|
| D 14 13C4 PFOA | 417.00 > 372.00 | 2.732 | 2.740 | -0.008 | 5396922 | 65.7 | | 131 | 16855 | |
| D 19 13C5 PFNA | 468.00 > 423.00 | 3.108 | 3.111 | -0.003 | 3498302 | 53.2 | | 106 | 13439 | |
| D 18 13C4 PFOS | 503.00 > 80.00 | 3.108 | 3.111 | -0.003 | 5517267 | 51.0 | | 107 | 24880 | |
| D 21 13C8 FOSA | 506.00 > 78.00 | 3.462 | 3.454 | 0.008 | 159718 | 0.8737 | | 1.7 | 1845 | |
| 24 Perfluorodecanoic acid | 513.00 > 469.00 | 3.480 | 3.474 | 0.006 | 1.000 | 3500 | 0.0511 | | 15.1 | M |
| D 23 13C2 PFDA | 515.00 > 470.00 | 3.471 | 3.474 | -0.003 | 3495054 | 62.6 | | 125 | 11210 | |
| 31 Perfluoroundecanoic acid | 563.00 > 519.00 | 3.797 | 3.797 | 0.0 | 1.000 | 7572 | 0.0460 | | 20.6 | |
| D 30 13C2 PFUnA | 565.00 > 520.00 | 3.797 | 3.797 | 0.0 | 2433012 | 59.7 | | 119 | 6481 | |
| D 36 13C2 PFDoA | 615.00 > 570.00 | 4.097 | 4.088 | 0.009 | 2269038 | 50.8 | | 102 | 4361 | |

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_014.d

Injection Date: 27-Jul-2017 22:18:32

Instrument ID: A8_N

Lims ID: 320-29732-C-4-A

Lab Sample ID: 320-29732-4

Client ID: TP-PFC-019-TPE-D

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

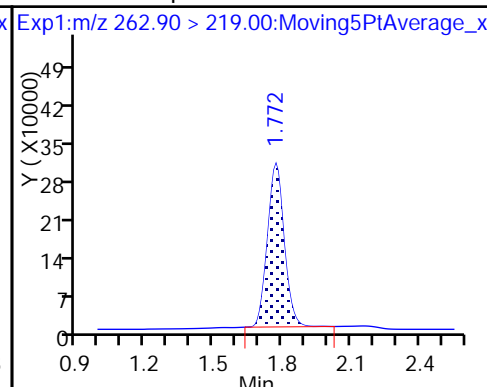
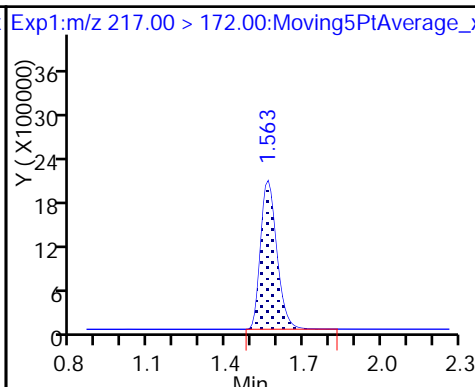
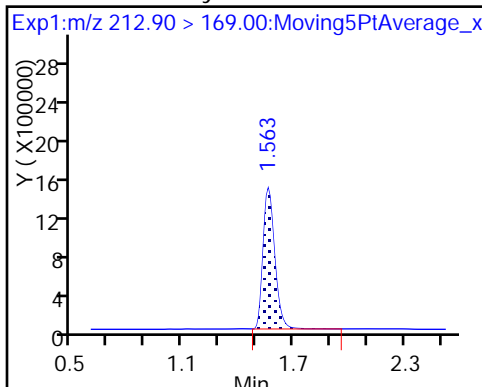
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

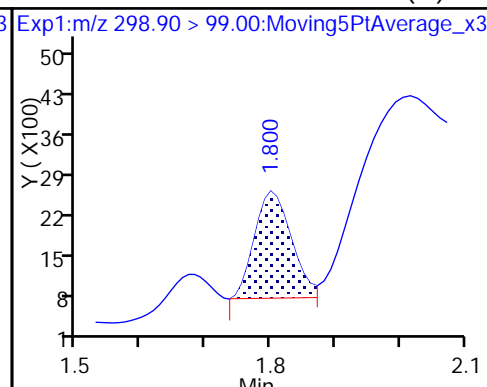
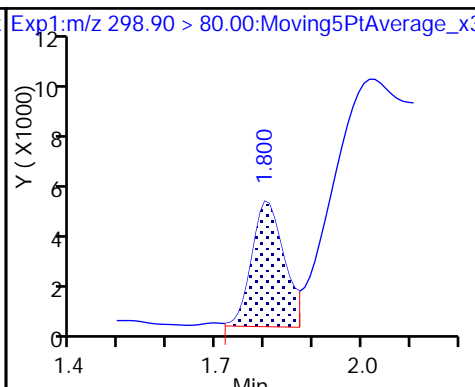
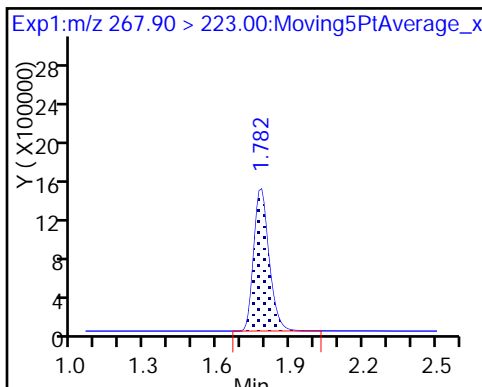
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

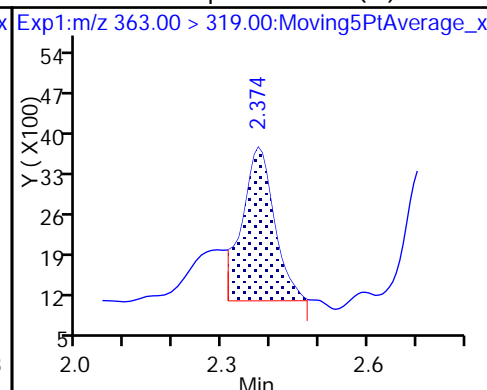
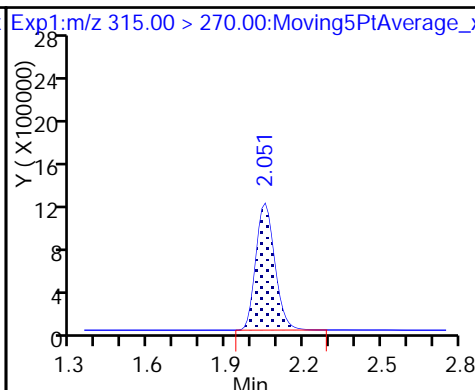
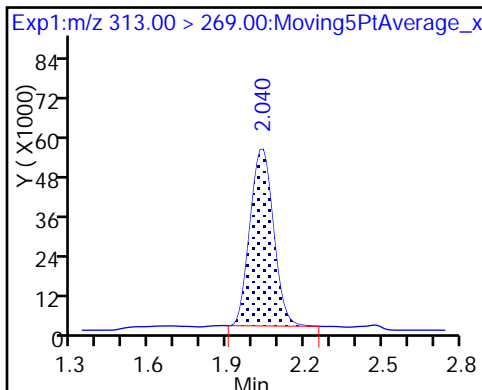
5 Perfluorobutanesulfonic acid (M)



6 Perfluorohexanoic acid

D 7 13C2 PFHxA

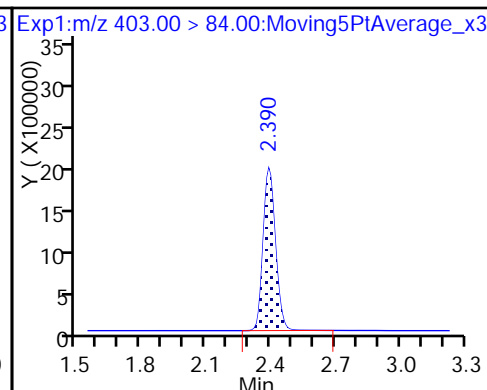
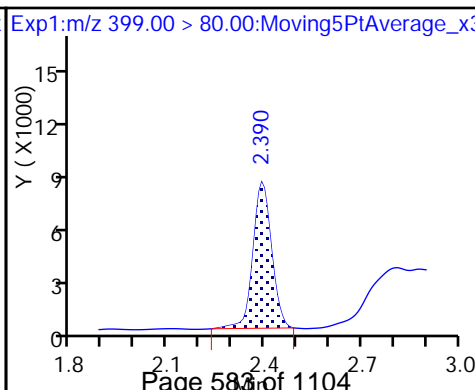
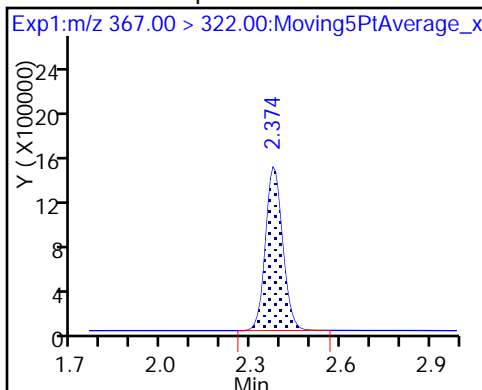
10 Perfluoroheptanoic acid (M)



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

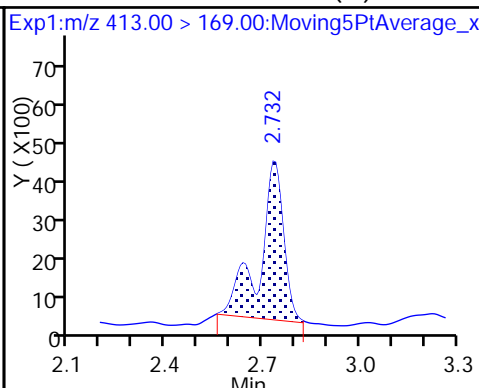
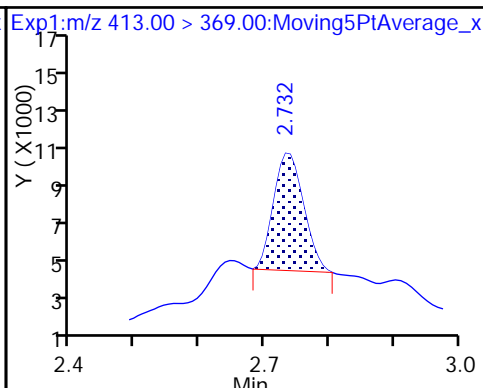
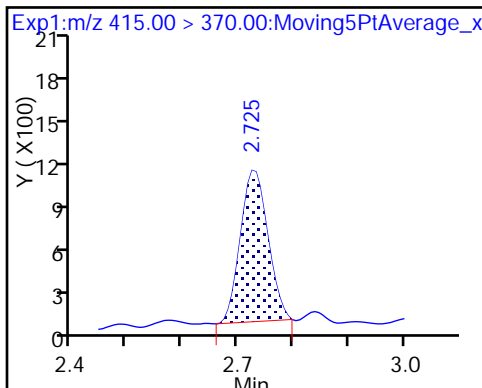
D 11 18O2 PFHxS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

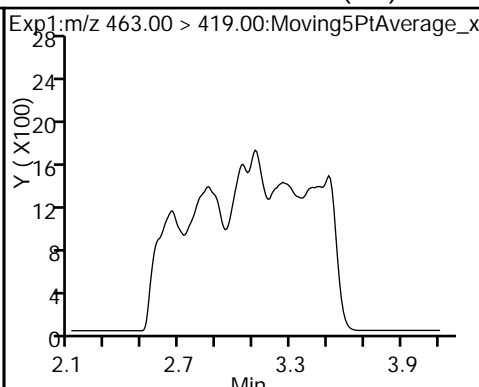
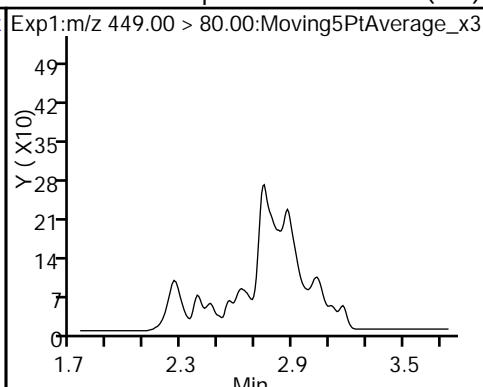
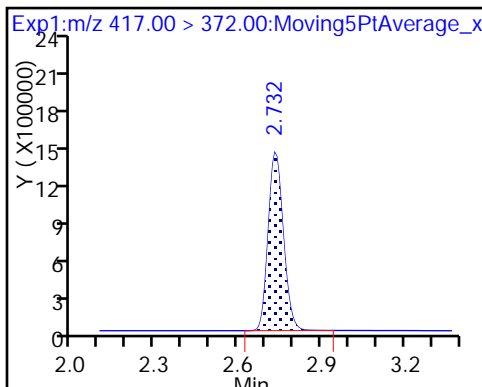
15 Perfluorooctanoic acid (M)



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid (ND)

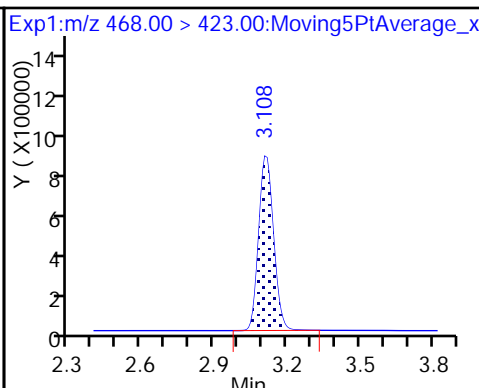
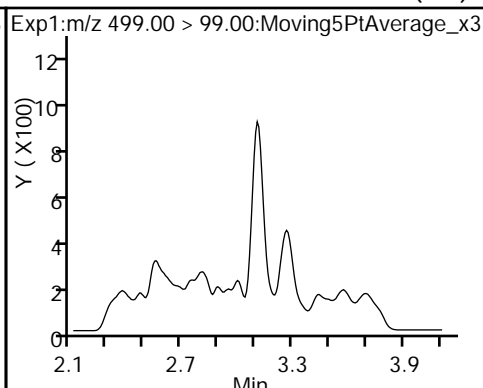
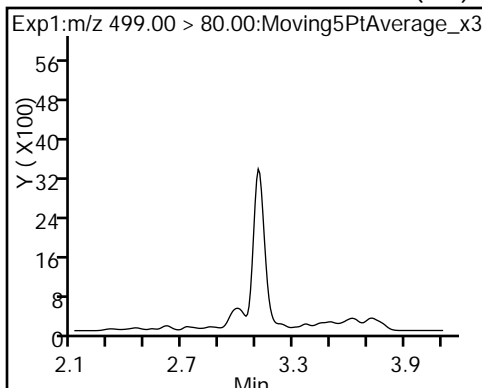
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

17 Perfluorooctane sulfonic acid (ND)

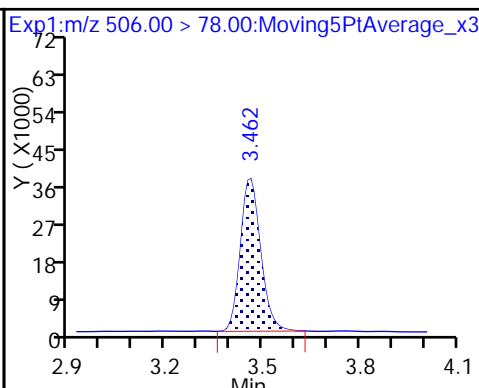
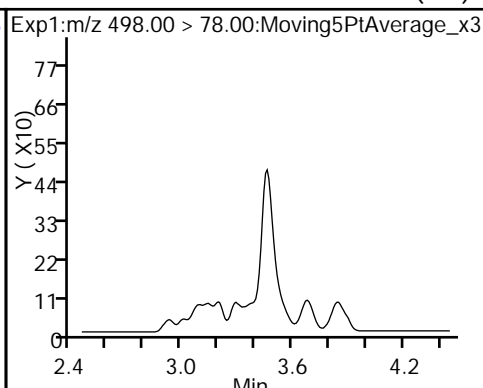
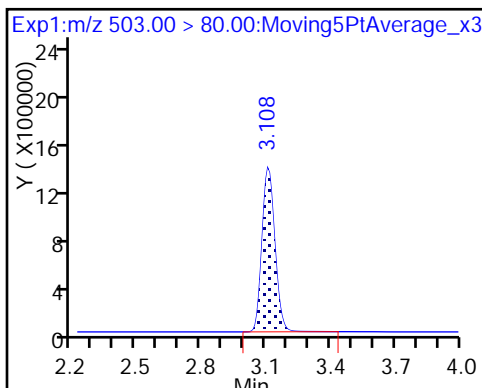
D 19 13C5 PFNA



D 18 13C4 PFOS

22 Perfluorooctane Sulfonamide (ND)

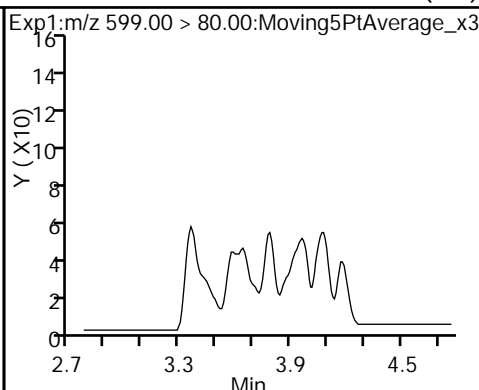
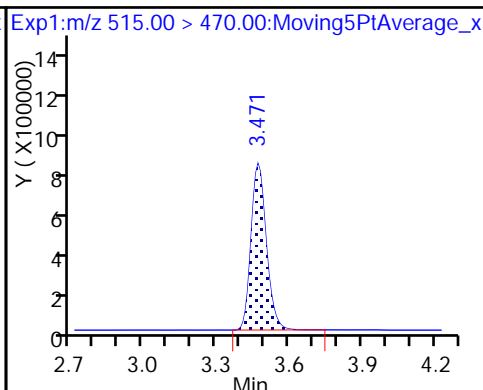
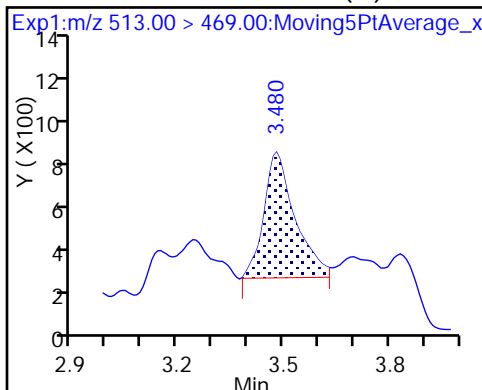
D 21 13C8 FOSA



24 Perfluorodecanoic acid (M)

D 23 13C2 PFDA

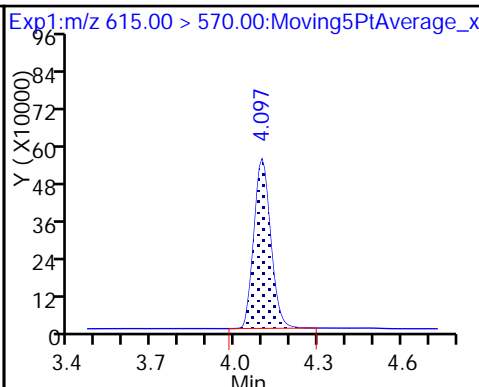
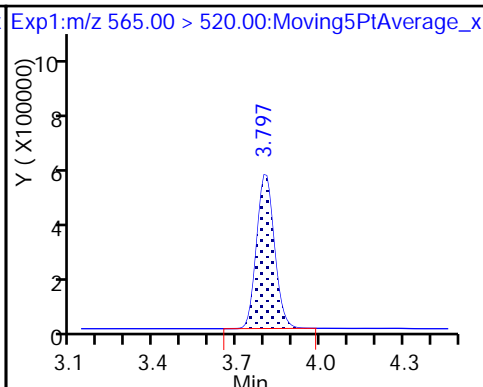
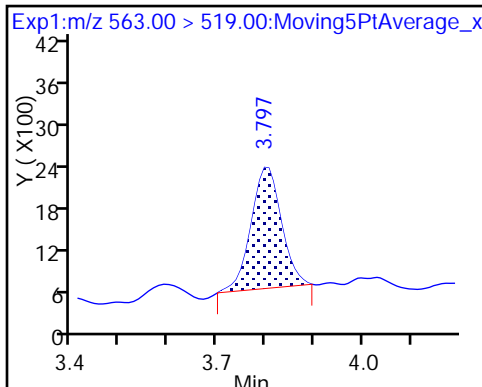
29 Perfluorodecane Sulfonic acid (ND)



31 Perfluoroundecanoic acid

D 30 13C2 PFUnA

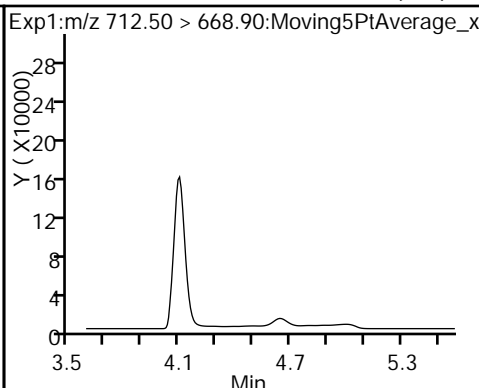
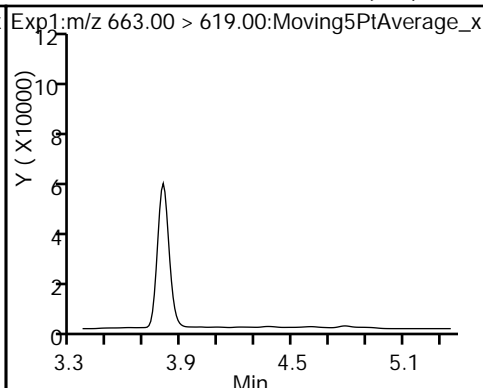
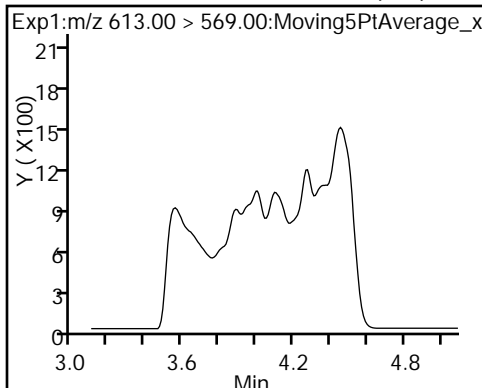
D 36 13C2 PFDoA



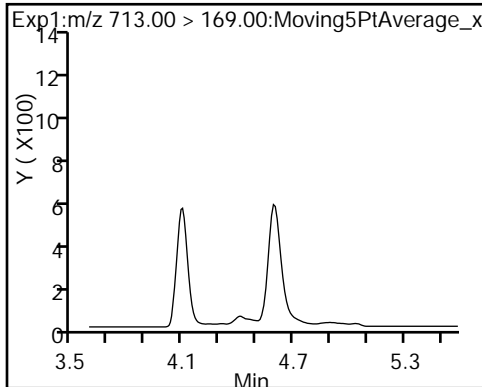
37 Perfluorododecanoic acid (ND)

41 Perfluorotridecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3 (mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15

Calibration End Date: 07/20/2017 18:04

Calibration ID: 32643

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175252/3 | 2017.07.20ICAL_003.d |
| Level 2 | IC 320-175252/4 | 2017.07.20ICAL_004.d |
| Level 3 | IC 320-175252/5 | 2017.07.20ICAL_005.d |
| Level 4 | IC 320-175252/6 | 2017.07.20ICAL_006.d |
| Level 5 | IC 320-175252/7 | 2017.07.20ICAL_007.d |
| Level 6 | IC 320-175252/8 | 2017.07.20ICAL_008.d |
| Level 7 | IC 320-175252/9 | 2017.07.20ICAL_009.d |

| ANALYTE | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | LVL 7 | | | | RT WINDOW | AVG RT |
|--|-------|-------|-------|-------|-------|-------|-------|--|--|--|---------------|--------|
| Perfluorobutanoic acid (PFBA) | 1.556 | 1.546 | 1.554 | 1.545 | 1.547 | 1.545 | 1.551 | | | | 1.299 - 1.799 | 1.549 |
| Perfluoropentanoic acid (PFPeA) | 1.766 | 1.755 | 1.763 | 1.745 | 1.747 | 1.745 | 1.751 | | | | 1.503 - 2.003 | 1.753 |
| Perfluorobutanesulfonic acid (PFBS) | 1.784 | 1.782 | 1.791 | 1.773 | 1.775 | 1.772 | 1.778 | | | | 1.599 - 1.959 | 1.779 |
| 4:2 FTS | 1.998 | 1.983 | 1.994 | 1.971 | 1.975 | 1.982 | 1.990 | | | | 1.735 - 2.235 | 1.985 |
| Perfluorohexanoic acid (PFHxA) | 2.032 | 2.029 | 2.028 | 2.017 | 2.021 | 2.017 | 2.024 | | | | 1.774 - 2.274 | 2.024 |
| Perfluoroheptanoic acid (PFHpA) | 2.370 | 2.355 | 2.366 | 2.343 | 2.350 | 2.347 | 2.356 | | | | 2.105 - 2.605 | 2.355 |
| Perfluorohexanesulfonic acid (PFHxS) | ++++ | 2.371 | 2.374 | 2.359 | 2.366 | 2.363 | 2.373 | | | | 2.119 - 2.619 | 2.368 |
| 6:2 FTS | 2.700 | 2.685 | 2.689 | 2.676 | 2.678 | 2.677 | 2.681 | | | | 2.434 - 2.934 | 2.684 |
| Perfluorooctanoic acid (PFOA) | 2.721 | 2.707 | 2.718 | 2.705 | 2.707 | 2.699 | 2.710 | | | | 2.460 - 2.960 | 2.710 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 2.728 | 2.714 | 2.725 | 2.705 | 2.707 | 2.713 | 2.717 | | | | 2.466 - 2.966 | 2.716 |
| Perfluorooctanesulfonic acid (PFOS) | 3.093 | 3.076 | 3.090 | 3.072 | 3.080 | 3.071 | 3.076 | | | | 2.830 - 3.330 | 3.080 |
| Perfluorononanoic acid (PFNA) | 3.093 | 3.084 | 3.090 | 3.072 | 3.080 | 3.071 | 3.076 | | | | 2.831 - 3.331 | 3.081 |
| Perfluorooctane Sulfonamide (FOSA) | 3.431 | 3.420 | 3.428 | 3.417 | 3.421 | 3.414 | 3.422 | | | | 3.172 - 3.672 | 3.422 |
| 8:2 FTS | 3.439 | 3.429 | 3.436 | 3.426 | 3.421 | 3.423 | 3.422 | | | | 3.178 - 3.678 | 3.428 |
| Perfluorodecanoic acid (PFDA) | 3.447 | 3.437 | 3.444 | 3.434 | 3.439 | 3.432 | 3.431 | | | | 3.188 - 3.688 | 3.438 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | 3.613 | 3.600 | 3.609 | 3.597 | 3.598 | 3.590 | 3.590 | | | | 3.350 - 3.850 | 3.600 |
| Perfluorodecanesulfonic acid (PFDS) | 3.759 | 3.747 | 3.755 | 3.743 | 3.744 | 3.737 | 3.747 | | | | 3.498 - 3.998 | 3.747 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | 3.778 | 3.766 | 3.775 | 3.763 | 3.764 | 3.756 | 3.757 | | | | 3.516 - 4.016 | 3.766 |
| Perfluoroundecanoic acid (PFUnA) | 3.778 | 3.766 | 3.775 | 3.763 | 3.764 | 3.756 | 3.757 | | | | 3.516 - 4.016 | 3.766 |
| MeFOSA | 3.919 | 3.909 | 3.923 | 3.915 | 3.919 | 3.913 | 3.916 | | | | 3.666 - 4.166 | 3.916 |
| Perfluorododecanoic acid (PFDoA) | 4.071 | 4.064 | 4.065 | 4.055 | 4.062 | 4.047 | 4.052 | | | | 3.809 - 4.309 | 4.059 |
| N-EtFOSA-M | 4.105 | 4.099 | 4.108 | 4.099 | 4.105 | 4.100 | 4.106 | | | | 3.853 - 4.353 | 4.103 |
| Perfluorotridecanoic Acid (PFTriA) | 4.340 | 4.327 | 4.337 | 4.326 | 4.326 | 4.314 | 4.323 | | | | 4.078 - 4.578 | 4.328 |
| Perfluorotetradecanoic acid (PFTeA) | 4.583 | 4.568 | 4.578 | 4.562 | 4.567 | 4.550 | 4.563 | | | | 4.317 - 4.817 | 4.567 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | ++++ | 4.978 | 4.987 | 4.982 | 4.979 | 4.966 | 4.968 | | | | 4.729 - 5.229 | 4.977 |
| Perfluoro-n-octadecanoic acid (PFODA) | 5.340 | 5.321 | 5.329 | 5.326 | 5.317 | 5.306 | 5.309 | | | | 5.071 - 5.571 | 5.321 |
| 13C4 PFBA | 1.556 | 1.546 | 1.545 | 1.536 | 1.547 | 1.545 | 1.542 | | | | 1.295 - 1.795 | 1.545 |
| 13C5 PFPeA | 1.757 | 1.755 | 1.763 | 1.745 | 1.747 | 1.745 | 1.751 | | | | 1.502 - 2.002 | 1.752 |
| 13C2 PFHxA | 2.032 | 2.029 | 2.028 | 2.017 | 2.021 | 2.017 | 2.024 | | | | 1.774 - 2.274 | 2.024 |
| 13C4-PFHpA | 2.370 | 2.355 | 2.358 | 2.343 | 2.350 | 2.347 | 2.356 | | | | 2.104 - 2.604 | 2.354 |
| 18O2 PFHxS | 2.378 | 2.371 | 2.374 | 2.359 | 2.366 | 2.363 | 2.373 | | | | 2.119 - 2.619 | 2.369 |
| M2-6:2 FTS | 2.700 | 2.685 | 2.689 | 2.676 | 2.678 | 2.677 | 2.681 | | | | 2.434 - 2.934 | 2.684 |

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

| ANALYTE | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | LVL 7 | | | | RT WINDOW | AVG RT |
|--------------|-------|-------|-------|-------|-------|-------|-------|--|--|--|---------------|--------|
| 13C4 PFOA | 2.721 | 2.707 | 2.718 | 2.698 | 2.700 | 2.699 | 2.703 | | | | 2.456 - 2.956 | 2.707 |
| 13C4 PFOS | 3.093 | 3.076 | 3.090 | 3.072 | 3.071 | 3.071 | 3.076 | | | | 2.828 - 3.328 | 3.078 |
| 13C5 PFNA | 3.093 | 3.076 | 3.090 | 3.072 | 3.080 | 3.071 | 3.076 | | | | 2.830 - 3.330 | 3.080 |
| 13C8 FOSA | 3.431 | 3.420 | 3.428 | 3.417 | 3.421 | 3.414 | 3.422 | | | | 3.172 - 3.672 | 3.422 |
| M2-8:2FTS | 3.439 | 3.429 | 3.436 | 3.426 | 3.421 | 3.423 | 3.422 | | | | 3.178 - 3.678 | 3.428 |
| 13C2 PFDA | 3.447 | 3.437 | 3.444 | 3.434 | 3.439 | 3.432 | 3.431 | | | | 3.188 - 3.688 | 3.438 |
| d3-NMeFOSAA | 3.602 | 3.589 | 3.599 | 3.587 | 3.587 | 3.590 | 3.590 | | | | 3.342 - 3.842 | 3.592 |
| d5-NEtFOSAA | 3.769 | 3.756 | 3.765 | 3.753 | 3.754 | 3.747 | 3.757 | | | | 3.507 - 4.007 | 3.757 |
| 13C2 PFUnA | 3.778 | 3.766 | 3.775 | 3.763 | 3.764 | 3.756 | 3.757 | | | | 3.516 - 4.016 | 3.766 |
| d-N-MeFOSA-M | 3.912 | 3.909 | 3.916 | 3.907 | 3.910 | 3.905 | 3.907 | | | | 3.660 - 4.160 | 3.909 |
| 13C2 PFDoA | 4.071 | 4.064 | 4.065 | 4.055 | 4.062 | 4.047 | 4.052 | | | | 3.809 - 4.309 | 4.059 |
| d-N-EtFOSA-M | 4.096 | 4.091 | 4.100 | 4.090 | 4.097 | 4.092 | 4.097 | | | | 3.845 - 4.345 | 4.095 |
| 13C2-PFTeDA | 4.583 | 4.568 | 4.578 | 4.562 | 4.567 | 4.550 | 4.551 | | | | 4.316 - 4.816 | 4.566 |
| 13C2-PFHxDA | 4.992 | 4.978 | 4.987 | 4.973 | 4.970 | 4.966 | 4.968 | | | | 4.726 - 5.226 | 4.976 |

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175252/3 | 2017.07.20ICAL_003.d |
| Level 2 | IC 320-175252/4 | 2017.07.20ICAL_004.d |
| Level 3 | IC 320-175252/5 | 2017.07.20ICAL_005.d |
| Level 4 | IC 320-175252/6 | 2017.07.20ICAL_006.d |
| Level 5 | IC 320-175252/7 | 2017.07.20ICAL_007.d |
| Level 6 | IC 320-175252/8 | 2017.07.20ICAL_008.d |
| Level 7 | IC 320-175252/9 | 2017.07.20ICAL_009.d |

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD | # | MAX %RSD | R ² OR COD | # | MIN R ² OR COD |
|-------------|------------------|------------------|------------------|--------|------------|-------------|------------|----|---|--------|------|------|----------|-----------------------|---|---------------------------|
| | LVL 1 LVL 5 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 | | B | M1 | M2 | | | | | | | | |
| 13C4 PFBA | 184012 185552 | 188724 167545 | 191598 156668 | 185732 | Ave | | 179975.766 | | | 7.1 | | 50.0 | | | | |
| 13C5 PFPeA | 122795 124528 | 130582 109997 | 126664 100849 | 121600 | Ave | | 119573.457 | | | 8.7 | | 50.0 | | | | |
| 13C2 PFHxA | 114823 110433 | 116762 102742 | 116882 96851 | 114330 | Ave | | 110403.354 | | | 7.0 | | 50.0 | | | | |
| 13C4-PFHpA | 95409 103374 | 102587 94116 | 101750 82732 | 101240 | Ave | | 97315.4086 | | | 7.6 | | 50.0 | | | | |
| 18O2 PFHxS | 159078 167295 | 166967 156734 | 162565 148473 | 161303 | Ave | | 160345.113 | | | 4.1 | | 50.0 | | | | |
| M2-6:2FTS | 51318 53113 | 53061 51429 | 54985 52915 | 51250 | Ave | | 52581.6090 | | | 2.6 | | 50.0 | | | | |
| 13C4 PFOA | 93593 89561 | 94544 76147 | 96123 71904 | 92711 | Ave | | 87797.4314 | | | 11.0 | | 50.0 | | | | |
| 13C4 PFOS | 118735 120329 | 123509 112784 | 117549 112924 | 120440 | Ave | | 118038.613 | | | 3.4 | | 50.0 | | | | |
| 13C5 PFNA | 72184 70397 | 73797 65028 | 73618 58471 | 71479 | Ave | | 69282.2000 | | | 8.1 | | 50.0 | | | | |
| 13C8 FOSA | 207809 196759 | 198672 183580 | 210281 171947 | 205012 | Ave | | 196294.226 | | | 7.1 | | 50.0 | | | | |
| M2-8:2FTS | 40505 38389 | 41503 36290 | 41937 35315 | 40810 | Ave | | 39249.7614 | | | 6.7 | | 50.0 | | | | |
| 13C2 PFDA | 64076 62969 | 65299 54232 | 66024 49314 | 61667 | Ave | | 60511.5114 | | | 10.4 | | 50.0 | | | | |
| d3-NMeFOSAA | 21840 23007 | 21552 20583 | 23199 21005 | 22482 | Ave | | 21952.5343 | | | 4.5 | | 50.0 | | | | |
| d5-NEtFOSAA | 23638 22454 | 23747 21205 | 24829 21348 | 23716 | Ave | | 22990.8743 | | | 5.9 | | 50.0 | | | | |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD | # | MAX %RSD | R ² OR COD | # | MIN R ² OR COD |
|--------------|----------------|----------------|----------------|-------|---------------|-------------|------------|----|---|--------|------|---|-------------|--------------------------|---|------------------------------|
| | LVL 1 LVL 5 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 | | B | M1 | M2 | | | | | | | | |
| 13C2 PFUnA | 43482 44328 | 46382 38330 | 47040 34692 | 39683 | Ave | | 41991.1343 | | | 10.8 | | | 50.0 | | | |
| d-N-MeFOSA-M | 51083 51227 | 47844 49888 | 51933 51332 | 49699 | Ave | | 50429.4543 | | | 2.8 | | | 50.0 | | | |
| 13C2 PFDoA | 49998 40202 | 41982 42031 | 46572 39982 | 44162 | Ave | | 43561.2200 | | | 8.4 | | | 50.0 | | | |
| d-N-EtFOSA-M | 51432 51144 | 48396 51163 | 52153 50933 | 51166 | Ave | | 50912.4286 | | | 2.3 | | | 50.0 | | | |
| 13C2-PFTeDA | 88801 79851 | 84941 77303 | 86226 71548 | 80617 | Ave | | 81326.5571 | | | 7.2 | | | 50.0 | | | |
| 13C2-PFHxDA | 47408 41414 | 41944 41386 | 44280 37378 | 43594 | Ave | | 42486.3314 | | | 7.3 | | | 50.0 | | | |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15

Calibration End Date: 07/20/2017 18:04

Calibration ID: 32643

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|--|------------------|------------------|--------|--------|--------|------------|-------------|--------|----|---|---------|------|------|----------|------------|--------|----------------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| | LVL 6 | LVL 7 | | | | | | | | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 1.0150 0.8556 | 0.9771 0.7409 | 0.9659 | 0.9226 | 0.8977 | AveID | | 0.9107 | | | 10.1 | | 35.0 | | | | |
| Perfluoropentanoic acid (PFPeA) | 1.0871 0.9743 | 0.9322 0.8787 | 1.0552 | 1.0646 | 0.9902 | AveID | | 0.9975 | | | 7.6 | | 35.0 | | | | |
| Perfluorobutanesulfonic acid (PFBS) | 1.6953 1.2825 | 1.4041 1.0944 | 1.6070 | 1.5054 | 1.3629 | AveID | | 1.4217 | | | 14.3 | | 50.0 | | | | |
| 4:2 FTS | 1.1137 0.8956 | 0.9780 0.8369 | 0.9398 | 1.0533 | 0.9729 | AveID | | 0.9700 | | | 9.6 | | 35.0 | | | | |
| Perfluorohexanoic acid (PFHxA) | 1.0814 0.9008 | 0.9181 0.8787 | 0.9100 | 0.9357 | 0.9369 | AveID | | 0.9374 | | | 7.1 | | 35.0 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 1.0945 0.9939 | 1.0135 0.9511 | 0.9982 | 1.0358 | 0.9774 | AveID | | 1.0092 | | | 4.6 | | 35.0 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | ++++ 1.0013 | 1.1086 0.9657 | 1.0586 | 1.0369 | 0.9681 | AveID | | 1.0232 | | | 5.5 | | 35.0 | | | | |
| 6:2FTS | 0.9957 0.8067 | 0.8483 0.7520 | 0.8665 | 0.9000 | 0.8382 | AveID | | 0.8582 | | | 8.9 | | 35.0 | | | | |
| Perfluorooctanoic acid (PFOA) | 1.1331 1.0736 | 1.0214 1.0005 | 1.0415 | 1.0347 | 1.0191 | AveID | | 1.0463 | | | 4.3 | | 35.0 | | | | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 1.2356 1.1769 | 1.0912 1.0178 | 1.2622 | 1.2396 | 1.1926 | AveID | | 1.1737 | | | 7.6 | | 50.0 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 1.0995 1.0598 | 1.0062 1.0209 | 1.0806 | 1.0121 | 0.9593 | AveID | | 1.0341 | | | 4.7 | | 35.0 | | | | |
| Perfluorononanoic acid (PFNA) | 1.0772 0.9752 | 0.9533 0.9595 | 1.0417 | 1.0132 | 0.9799 | AveID | | 1.0000 | | | 4.6 | | 35.0 | | | | |
| Perfluorooctane Sulfonamide (FOSA) | 1.0534 0.8759 | 0.9355 0.8006 | 0.9460 | 0.9215 | 0.9319 | AveID | | 0.9235 | | | 8.3 | | 35.0 | | | | |
| 8:2FTS | 1.0777 0.8385 | 0.9372 0.8492 | 0.9582 | 0.8885 | 0.8781 | AveID | | 0.9182 | | | 9.0 | | 35.0 | | | | |
| Perfluorodecanoic acid (PFDA) | 0.9949 0.9184 | 0.9016 0.9416 | 0.9469 | 0.9647 | 0.8831 | AveID | | 0.9359 | | | 4.1 | | 35.0 | | | | |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | 0.9585 0.9529 | 0.8112 0.9465 | 0.8886 | 0.9039 | 0.8937 | AveID | | 0.9079 | | | 5.7 | | 35.0 | | | | |
| Perfluorodecanesulfonic acid (PFDS) | 0.7154 0.6191 | 0.6095 0.5849 | 0.7026 | 0.6196 | 0.6069 | AveID | | 0.6369 | | | 8.0 | | 50.0 | | | | |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | 0.9234 0.8571 | 0.8514 0.8434 | 0.8278 | 0.8198 | 0.8265 | AveID | | 0.8499 | | | 4.1 | | 35.0 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 1.4279 0.9777 | 1.0732 1.0219 | 1.0939 | 1.0993 | 0.9522 | L2ID | 0.1852 | 1.0054 | | | | | | 0.9940 | | 0.9900 | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|--|------------------|------------------|--------|--------|--------|------------|-------------|--------|----|---|---------|------|------|----------|------------|--------|----------------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| | LVL 6 | LVL 7 | | | | | | | | | | | | | | | |
| MeFOSA | 0.9241 0.9052 | 0.8075 0.8952 | 0.9412 | 0.9037 | 0.8958 | AveID | | 0.8961 | | | 4.7 | | 35.0 | | | | |
| Perfluorododecanoic acid (PFDoA) | 0.9526 0.9241 | 0.9700 0.8975 | 0.9547 | 0.9186 | 0.9920 | AveID | | 0.9442 | | | 3.5 | | 35.0 | | | | |
| N-EtFOSA-M | 0.9404 0.9341 | 0.9229 0.9204 | 0.9545 | 0.9058 | 0.9131 | AveID | | 0.9273 | | | 1.8 | | 35.0 | | | | |
| Perfluorotridecanoic Acid (PFTriA) | 0.8626 0.8079 | 0.8641 0.8105 | 0.8594 | 0.8657 | 0.8882 | AveID | | 0.8512 | | | 3.5 | | 50.0 | | | | |
| Perfluorotetradecanoic acid (PFTeA) | 2.3446 1.6352 | 2.1101 1.6519 | 2.1737 | 1.7703 | 1.9416 | AveID | | 1.9468 | | | 14.1 | | 50.0 | | | | |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | ++++ 0.8388 | 1.4914 0.8647 | 0.9572 | 0.9244 | 0.8465 | L2ID | 0.6384 | 0.8505 | | | | | | 0.9990 | | 0.9900 | |
| Perfluoro-n-octadecanoic acid (PFODA) | 0.9507 0.8809 | 0.8622 0.8650 | 0.8506 | 0.8241 | 0.9180 | AveID | | 0.8788 | | | 4.9 | | 50.0 | | | | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175252/3 | 2017.07.20ICAL_003.d |
| Level 2 | IC 320-175252/4 | 2017.07.20ICAL_004.d |
| Level 3 | IC 320-175252/5 | 2017.07.20ICAL_005.d |
| Level 4 | IC 320-175252/6 | 2017.07.20ICAL_006.d |
| Level 5 | IC 320-175252/7 | 2017.07.20ICAL_007.d |
| Level 6 | IC 320-175252/8 | 2017.07.20ICAL_008.d |
| Level 7 | IC 320-175252/9 | 2017.07.20ICAL_009.d |

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|-------------|------------|---------------------|--------------------|----------|----------|---------|-----------------------|--------------|-------|-------|-------|
| | | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| | | LVL 6 | LVL 7 | | | | LVL 6 | LVL 7 | | | |
| 13C4 PFBA | Ave | 9200596 8377231 | 9436219 7833395 | 9579895 | 9286597 | 9277585 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C5 PFPeA | Ave | 6139729 5499850 | 6529085 5042456 | 6333208 | 6079990 | 6226392 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFHxA | Ave | 5741173 5137101 | 5838100 4842529 | 5844106 | 5716524 | 5521641 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C4-PFHpA | Ave | 4770470 4705801 | 5129374 4136580 | 5087476 | 5061975 | 5168717 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 18O2 PFHxS | Ave | 7524410 7413535 | 7897552 7022783 | 7689311 | 7629615 | 7913061 | 47.3 47.3 | 47.3 47.3 | 47.3 | 47.3 | 47.3 |
| M2-6:2FTS | Ave | 2437617 2442868 | 2520393 2513479 | 2611787 | 2434393 | 2522848 | 47.5 47.5 | 47.5 47.5 | 47.5 | 47.5 | 47.5 |
| 13C4 PFOA | Ave | 4679652 3807339 | 4727178 3595203 | 4806165 | 4635535 | 4478029 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C4 PFOS | Ave | 5675527 5391084 | 5903714 5397776 | 5618820 | 5757051 | 5751748 | 47.8 47.8 | 47.8 47.8 | 47.8 | 47.8 | 47.8 |
| 13C5 PFNA | Ave | 3609220 3251409 | 3689841 2923565 | 3680912 | 3573960 | 3519863 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C8 FOSA | Ave | 10390454 9178999 | 9933579 8597334 | 10514072 | 10250601 | 9837940 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| M2-8:2FTS | Ave | 1940171 1738290 | 1988005 1691570 | 2008772 | 1954799 | 1838838 | 47.9 47.9 | 47.9 47.9 | 47.9 | 47.9 | 47.9 |
| 13C2 PFDA | Ave | 3203793 2711585 | 3264948 2465695 | 3301213 | 3083355 | 3148440 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d3-NMeFOSAA | Ave | 1091995 1029158 | 1077600 1050235 | 1159944 | 1124094 | 1150361 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d5-NEtFOSAA | Ave | 1181920 1060235 | 1187339 1067375 | 1241427 | 1185817 | 1122693 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFUnA | Ave | 2174103 1916521 | 2319108 1734594 | 2352011 | 1984157 | 2216403 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|--------------|------------|--------------------|--------------------|---------|---------|---------|-----------------------|--------------|-------|-------|-------|
| | | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| | | LVL 6 | LVL 7 | | | | LVL 6 | LVL 7 | | | |
| d-N-MeFOSA-M | Ave | 2554150 2494419 | 2392214 2566577 | 2596651 | 2484961 | 2561337 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFDoA | Ave | 2499919 2101530 | 2099102 1999100 | 2328581 | 2208104 | 2010091 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d-N-EtFOSA-M | Ave | 2571603 2558136 | 2419802 2546633 | 2607670 | 2558301 | 2557205 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2-PFTeDA | Ave | 4440061 3865134 | 4247031 3577415 | 4311299 | 4030828 | 3992527 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2-PFHxDA | Ave | 2370411 2069286 | 2097197 1868909 | 2213998 | 2179702 | 2070713 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |

Curve Type Legend:

Ave = Average

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175252/3 | 2017.07.20ICAL_003.d |
| Level 2 | IC 320-175252/4 | 2017.07.20ICAL_004.d |
| Level 3 | IC 320-175252/5 | 2017.07.20ICAL_005.d |
| Level 4 | IC 320-175252/6 | 2017.07.20ICAL_006.d |
| Level 5 | IC 320-175252/7 | 2017.07.20ICAL_007.d |
| Level 6 | IC 320-175252/8 | 2017.07.20ICAL_008.d |
| Level 7 | IC 320-175252/9 | 2017.07.20ICAL_009.d |

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|---------------------------------------|--------|------------|--------------------|--------------------|---------|---------|----------|-----------------------|----------------|-------|-------|-------|
| | | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| Perfluorobutanoic acid (PFBA) | | AveID | 93383 14335268 | 184401 23214875 | 925332 | 3426995 | 8328503 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | | AveID | 66748 10716890 | 121725 17723967 | 668298 | 2589050 | 6165403 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | | AveID | 119198 17769760 | 207251 28727203 | 1154707 | 4293133 | 10077823 | 0.442 88.4 | 0.884 177 | 4.42 | 17.7 | 44.2 |
| 4:2 FTS | | AveID | 26691 4301810 | 48470 8272054 | 241314 | 1008354 | 2413036 | 0.467 93.4 | 0.934 187 | 4.67 | 18.7 | 46.7 |
| Perfluorohexanoic acid (PFHxA) | | AveID | 62085 9254644 | 107198 17019818 | 531793 | 2139637 | 5173116 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | | AveID | 52213 9354552 | 103969 15737233 | 507848 | 2097220 | 5052067 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | | AveID | ++++ 14281648 | 168436 26096061 | 783004 | 3044035 | 7368752 | ++++ 91.0 | 0.910 182 | 4.55 | 18.2 | 45.5 |
| 6:2FTS | | AveID | 24221 3932933 | 42671 7544242 | 225835 | 874570 | 2110170 | 0.474 94.8 | 0.948 190 | 4.74 | 19.0 | 47.4 |
| Perfluorooctanoic acid (PFOA) | | AveID | 53024 8175273 | 96571 14387974 | 500571 | 1918515 | 4563458 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | | AveID | 69832 12636679 | 128302 21882659 | 706250 | 2842525 | 6830714 | 0.476 95.2 | 0.952 190 | 4.76 | 19.0 | 47.6 |
| Perfluorooctanesulfonic acid (PFOS) | | AveID | 60576 11092240 | 115323 21396229 | 589410 | 2262384 | 5355867 | 0.464 92.8 | 0.928 186 | 4.64 | 18.6 | 46.4 |
| Perfluorononanoic acid (PFNA) | | AveID | 38878 6341679 | 70352 11221107 | 383423 | 1448390 | 3449039 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | | AveID | 109454 16079802 | 185849 27533112 | 994657 | 3778234 | 9167796 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| 8:2FTS | | AveID | 20909 2915139 | 37263 5746246 | 192486 | 694740 | 1614685 | 0.479 95.8 | 0.958 192 | 4.79 | 19.2 | 47.9 |
| Perfluorodecanoic acid (PFDA) | | AveID | 31875 4980519 | 58871 9286312 | 312593 | 1189794 | 2780389 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |

FORM VI
 LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
 RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|--|--------|------------|------------------|-------------------|--------|---------|---------|-----------------------|----------------|-------|-------|-------|
| | | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | | AveID | 10467 1961461 | 17484 3976390 | 103070 | 406426 | 1028023 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | | AveID | 40940 6731234 | 72566 12733574 | 398109 | 1438851 | 3520028 | 0.482 96.4 | 0.964 193 | 4.82 | 19.3 | 48.2 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | | AveID | 10914 1817407 | 20217 3601071 | 102763 | 388851 | 927893 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | | L2ID | 31045 3747668 | 49779 7090167 | 257295 | 872446 | 2110542 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| MeFOSA | | AveID | 23604 4515811 | 38635 9190215 | 244390 | 898240 | 2294511 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | | AveID | 23814 3884028 | 40721 7176939 | 222314 | 811349 | 1994038 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| N-EtFOSA-M | | AveID | 24183 4779335 | 44664 9376063 | 248915 | 926942 | 2334866 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | | AveID | 21565 3395607 | 36276 6481083 | 200109 | 764621 | 1785380 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | | AveID | 58614 6873007 | 88585 13208906 | 506153 | 1563632 | 3902732 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | | L2ID | +++++ 3525628 | 62612 6914779 | 222901 | 816435 | 1701571 | +++++ 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | | AveID | 23766 3702487 | 36195 6917166 | 198059 | 727856 | 1845337 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |

Curve Type Legend:

| |
|----------------------------------|
| AveID = Average isotope dilution |
| L2ID = Linear 1/conc^2 IsoDil |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_003.d
 Lims ID: IC L1 Full
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 20-Jul-2017 17:15:53 ALS Bottle#: 28 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 21-Jul-2017 11:40:12 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:20:26

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.556 | 1.545 | 0.011 | 9200596 | 51.1 | | 102 | 28721 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.556 | 1.549 | 0.007 | 93383 | 0.5573 | | 111 | 48.0 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.757 | 1.752 | 0.005 | 6139729 | 51.3 | | 103 | 44001 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.766 | 1.753 | 0.013 | 66748 | 0.5449 | | 109 | 39.5 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.784 | 1.777 | 0.007 | 155868 | NC | | | 7243 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.784 | 1.779 | 0.005 | 119198 | 0.5271 | | 119 | 112 | |
| | 298.90 > 99.00 | 1.784 | 1.779 | 0.005 | 50257 | | 2.37(0.00-0.00) | 119 | 97.6 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.998 | 1.985 | 0.013 | 26691 | 0.5362 | | 115 | 1324 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.032 | 2.024 | 0.008 | 5741173 | 52.0 | | 104 | 27348 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.032 | 2.024 | 0.008 | 62085 | 0.5768 | | 115 | 155 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.370 | 2.354 | 0.016 | 4770470 | 49.0 | | 98.0 | 29904 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.370 | 2.355 | 0.015 | 52213 | 0.5423 | | 108 | 163 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.378 | 2.369 | 0.009 | 7524410 | 46.9 | | 99.2 | 34308 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.378 | 2.369 | 0.009 | 97933 | 0.6017 | | 132 | 148 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.700 | 2.684 | 0.016 | 2437617 | 46.4 | 97.6 | 26142 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.700 | 2.684 | 0.016 | 1.000 | 24221 | 0.5500 | 116 | 644 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.721 | 2.703 | 0.018 | | 4597399 | 50.0 | | 39476 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.721 | 2.706 | 0.015 | | 4679652 | 53.3 | 107 | 33775 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.721 | 2.710 | 0.011 | 1.000 | 53024 | 0.5415 | 108 | 9.1 |
| | 413.00 | > 169.00 | 2.721 | 2.710 | 0.011 | 1.000 | 33457 | 1.58(0.90-1.10) | 108 | 186 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.728 | 2.716 | 0.012 | 1.000 | 69832 | 0.5011 | 105 | 1898 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.093 | 3.078 | 0.015 | | 5675527 | 48.1 | 101 | 32114 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.093 | 3.080 | 0.013 | 1.000 | 60576 | 0.4934 | 106 | 701 |
| | 499.00 | > 99.00 | 3.093 | 3.080 | 0.013 | 1.000 | 12535 | 4.83(0.90-1.10) | 106 | 97.4 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.093 | 3.080 | 0.013 | | 3609220 | 52.1 | 104 | 22234 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.093 | 3.081 | 0.012 | 1.000 | 38878 | 0.5386 | 108 | 93.5 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.431 | 3.422 | 0.009 | | 10390454 | 52.9 | 106 | 25590 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.431 | 3.422 | 0.009 | 1.000 | 109454 | 0.5703 | 114 | 3261 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.439 | 3.428 | 0.011 | | 1940171 | 49.4 | 103 | 25053 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.439 | 3.428 | 0.011 | 1.000 | 20909 | 0.5622 | 117 | 1214 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.447 | 3.438 | 0.009 | | 3203793 | 52.9 | 106 | 13546 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.447 | 3.438 | 0.009 | 1.000 | 31875 | 0.5315 | 106 | 133 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.602 | 3.592 | 0.010 | | 1091995 | 49.7 | 99.5 | 7734 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.613 | 3.600 | 0.013 | 1.003 | 10467 | 0.5279 | 106 | 188 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.759 | 3.748 | 0.011 | 1.000 | 40940 | 0.5414 | 112 | 1529 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.769 | 3.757 | 0.012 | | 1181920 | 51.4 | 103 | 3824 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.778 | 3.766 | 0.012 | | 2174103 | 51.8 | 104 | 11264 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.778 | 3.766 | 0.012 | 1.000 | 31045 | 0.5259 | 105 | 58.7 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.778 | 3.766 | 0.012 | 1.003 | 10914 | 0.5432 | 109 | 262 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.912 | 3.910 | 0.002 | | 2554150 | | 101 | 755 | |
| 35 MeFOSA | 512.00 > 169.00 | 3.919 | 3.916 | 0.003 | 1.000 | 23604 | 0.5156 | 103 | 1256 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.071 | 4.059 | 0.012 | | 2499919 | | 115 | 5518 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.071 | 4.059 | 0.012 | 1.000 | 23814 | 0.5044 | 101 | 23.2 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.096 | 4.095 | 0.001 | | 2571603 | | 101 | 5704 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.105 | 4.103 | 0.002 | 1.000 | 24183 | 0.5070 | 101 | 865 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.340 | 4.328 | 0.012 | 1.000 | 21565 | 0.5067 | 101 | 8.0 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.583 | 4.566 | 0.017 | | 4440061 | | 109 | 12407 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.583 | 4.567 | 0.016 | 1.000 | 58614 | 0.6022 | 120 | 4.9 | M |
| | 713.00 > 169.00 | 4.572 | 4.567 | 0.005 | 0.998 | 7596 | 7.72(0.00-0.00) | 120 | 112 | M |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 4.992 | 4.976 | 0.016 | | 2370411 | | 112 | 4140 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 4.992 | 4.979 | 0.013 | 1.000 | 52506 | 0.4841 | 96.8 | 9.4 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.340 | 5.321 | 0.019 | 1.000 | 23766 | 0.5409 | 108 | 11.4 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L1_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_003.d

Injection Date: 20-Jul-2017 17:15:53

Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 28

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

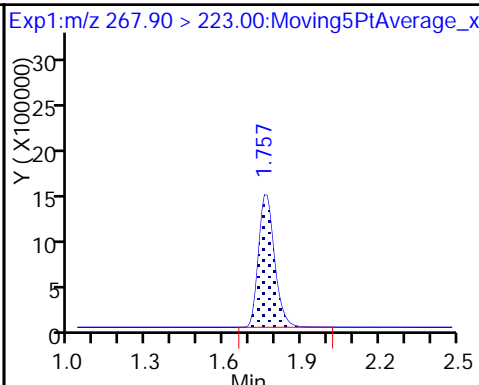
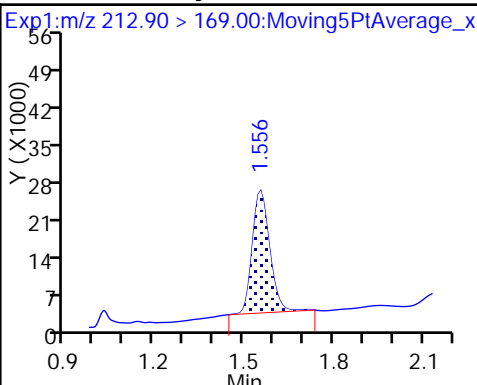
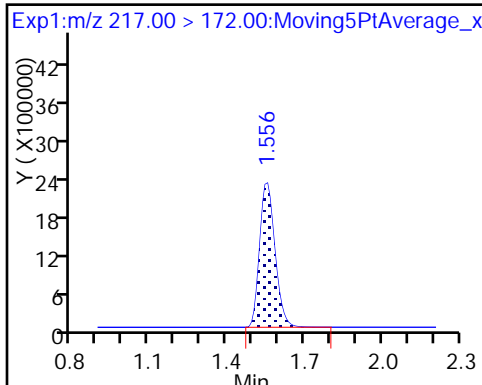
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

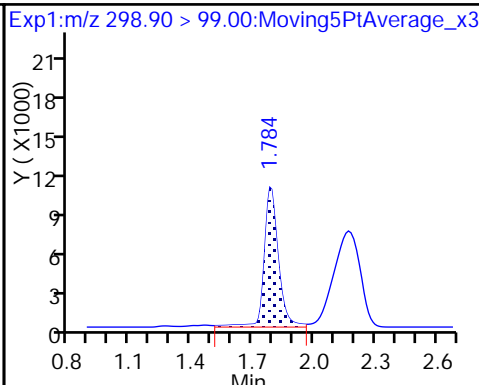
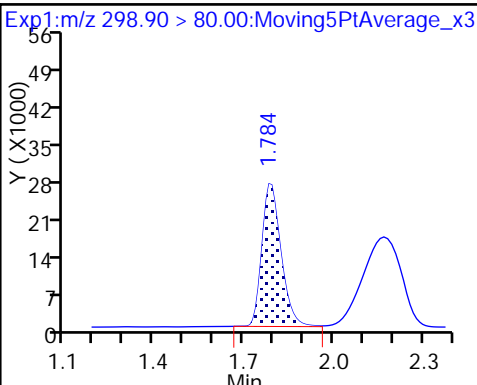
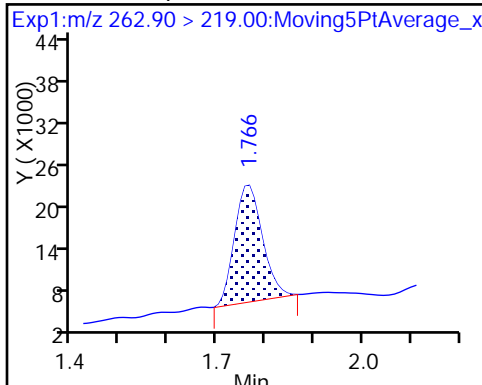
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

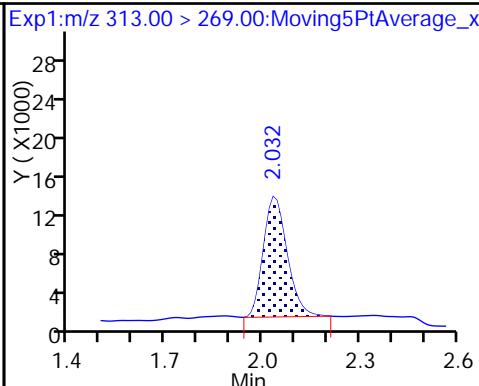
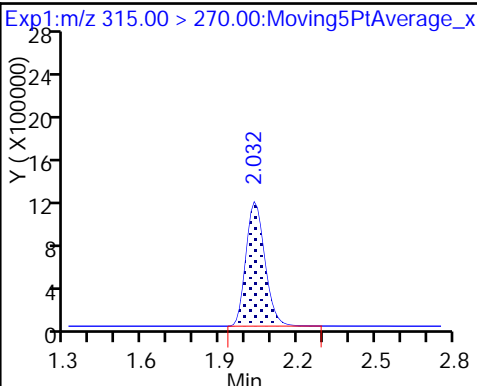
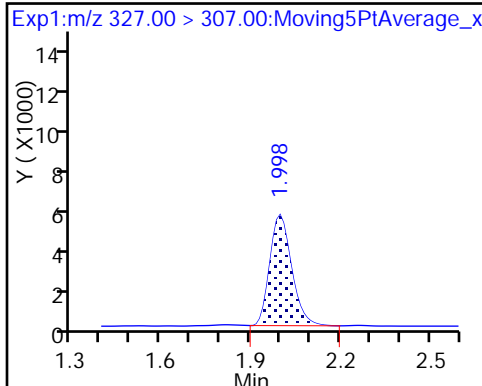
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

D 7 13C2 PFHxA

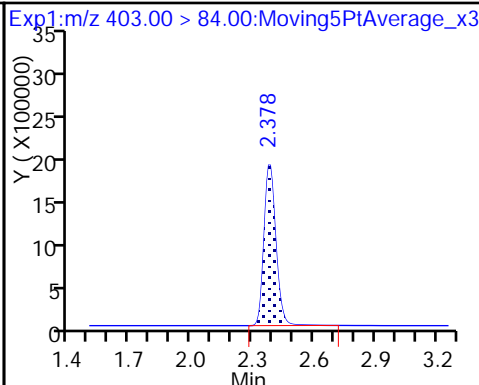
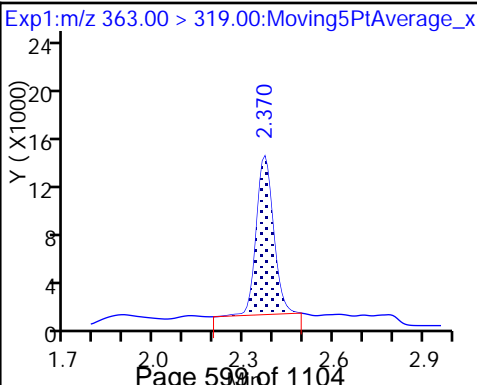
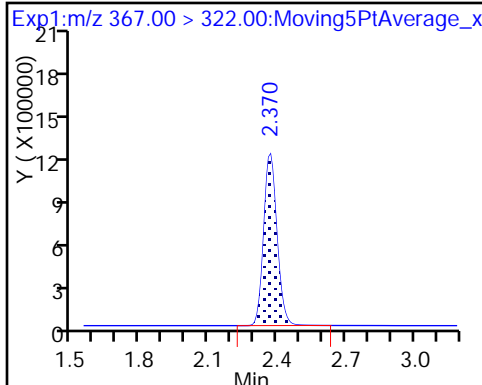
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

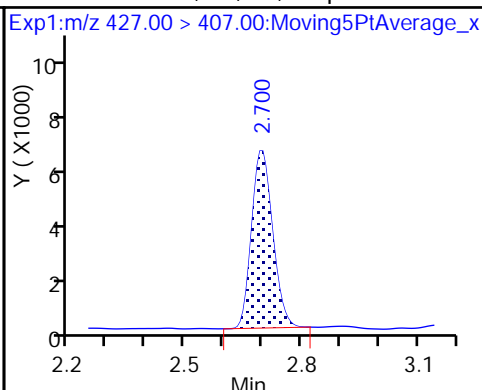
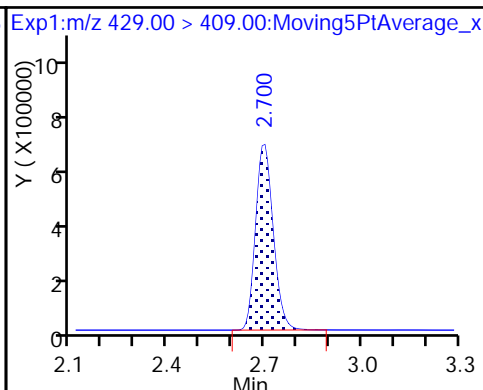
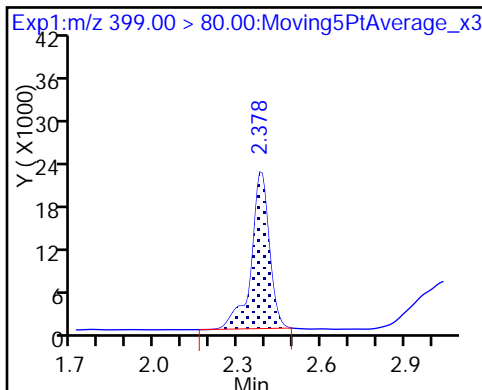
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

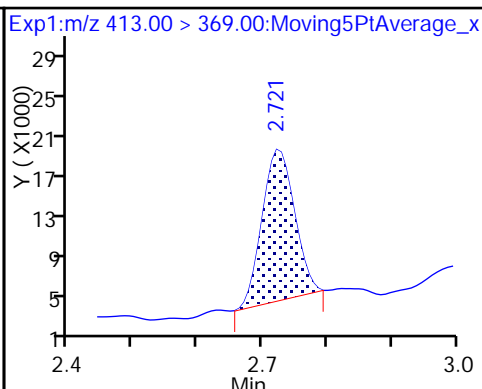
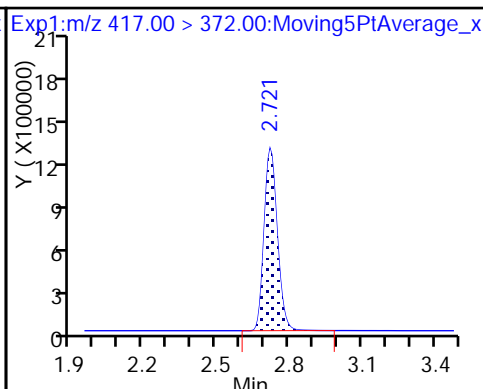
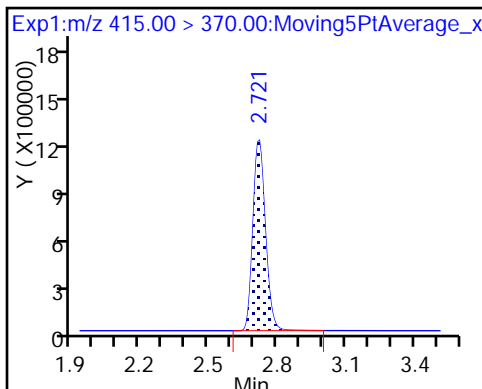
13 Sodium 1H,1H,2H,2H-perfluorooctane



* 62 13C2-PFOA

D 14 13C4 PFOA

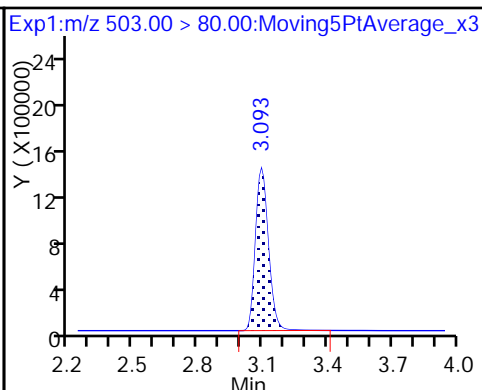
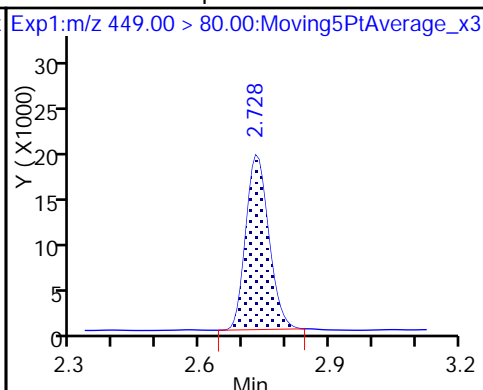
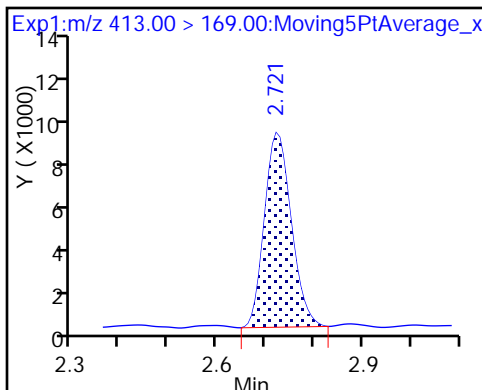
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

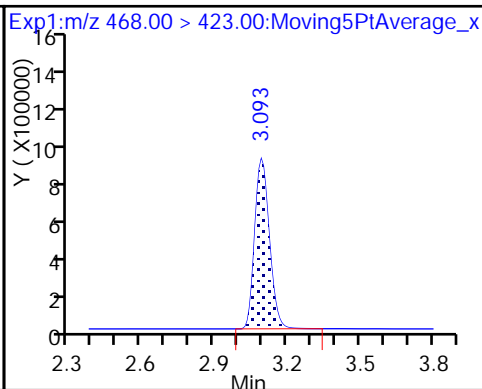
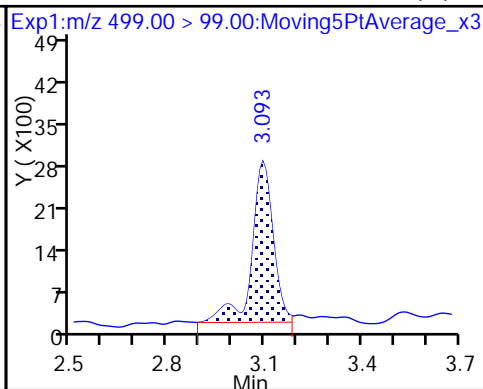
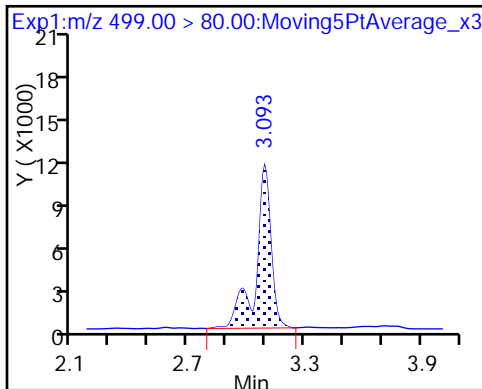
D 18 13C4 PFOS

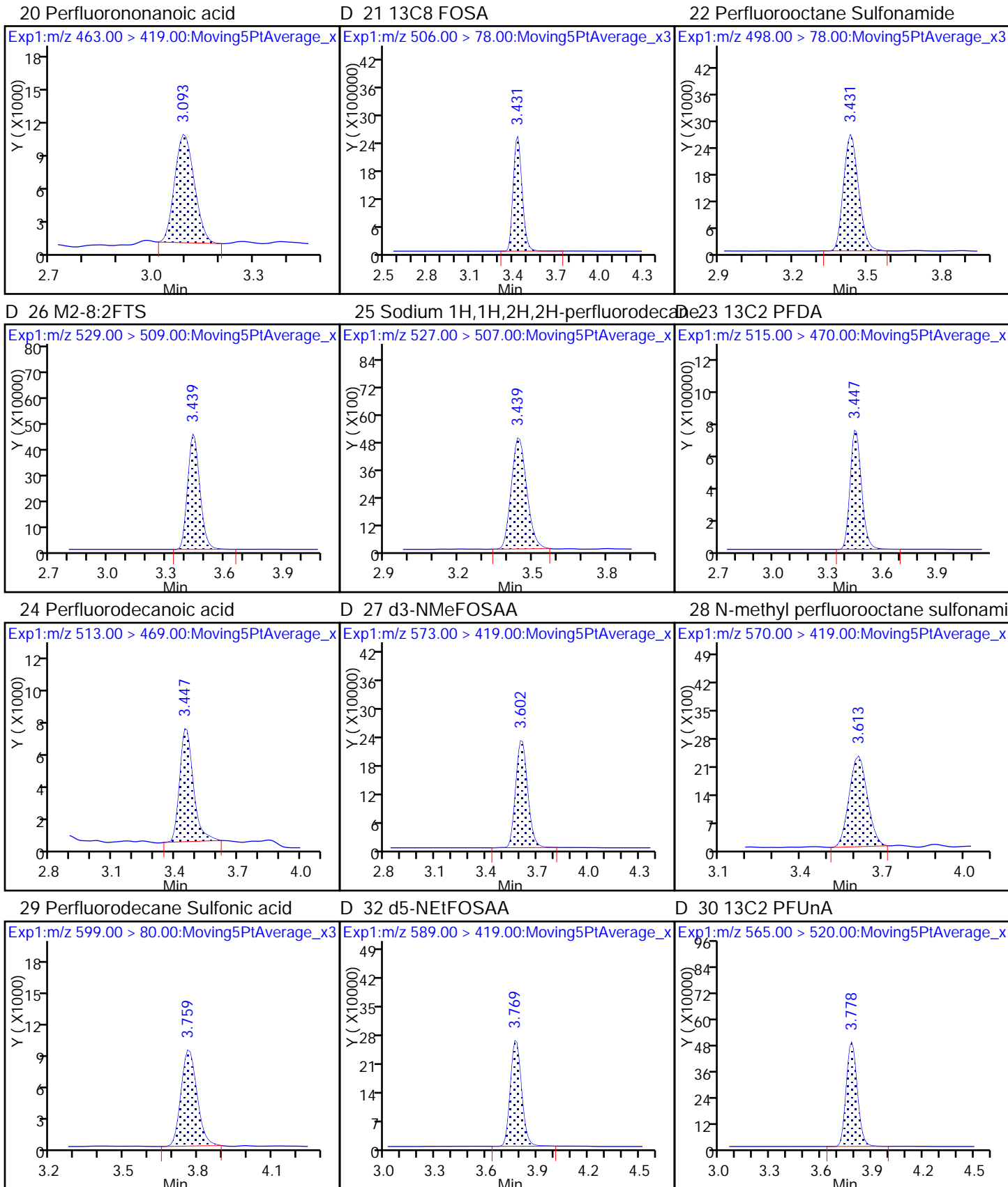


17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid (M)

D 19 13C5 PFNA

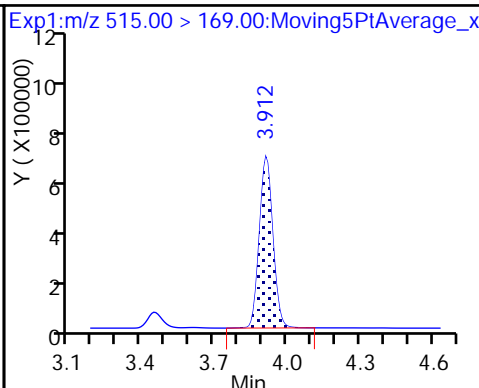
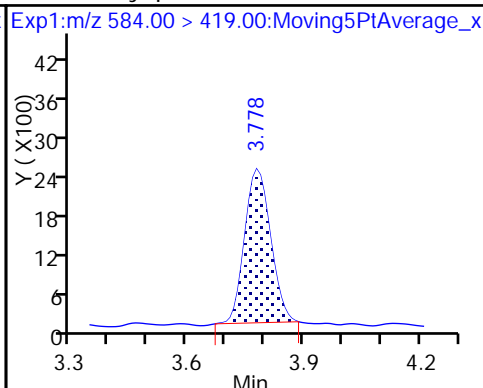
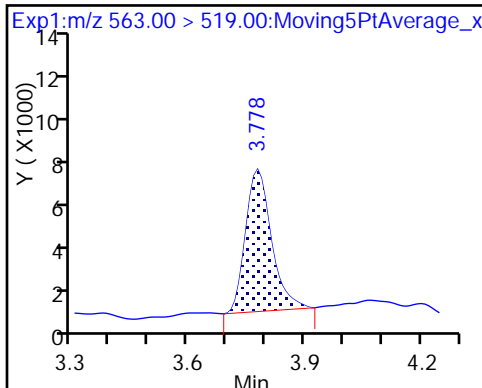




31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid D

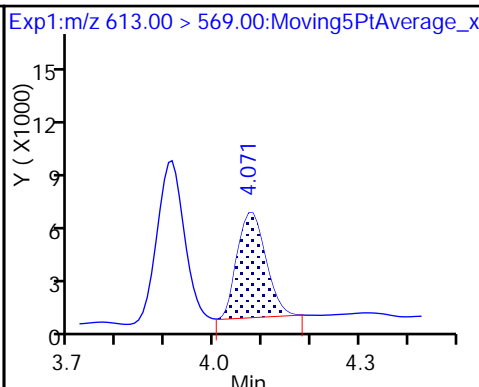
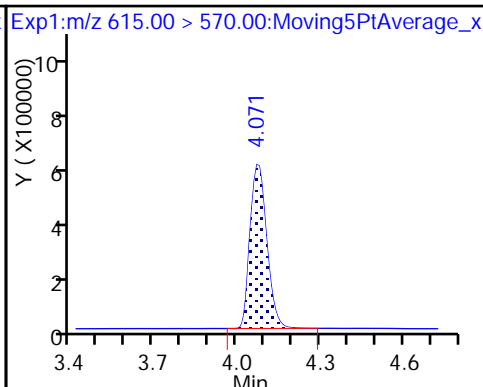
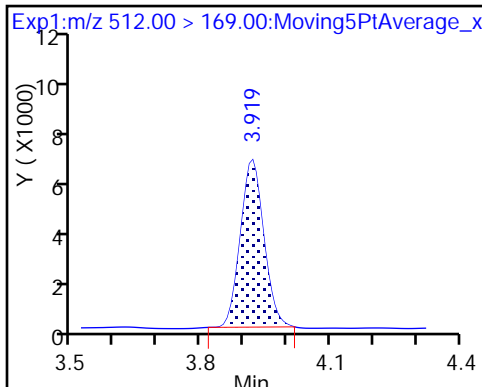
34 d-N-MeFOSA-M



35 MeFOSA

D 36 13C2 PFDaA

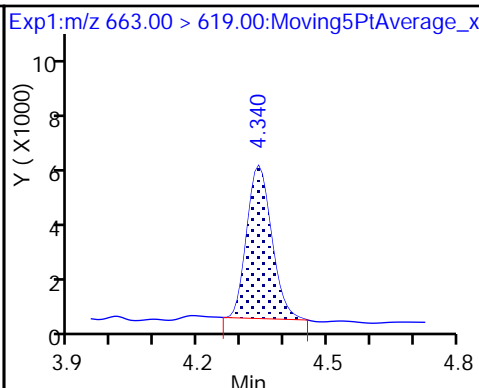
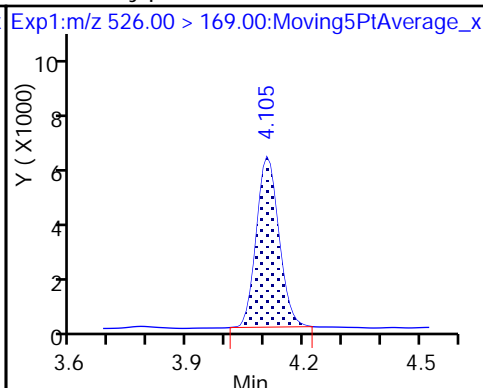
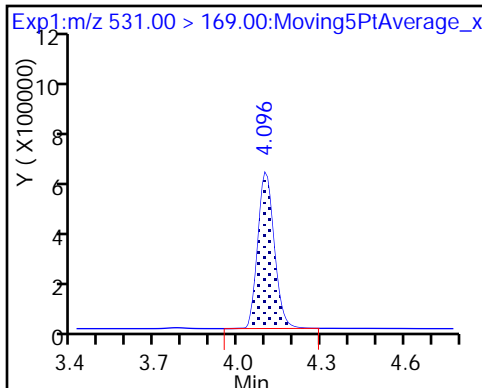
37 Perfluorododecanoic acid



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

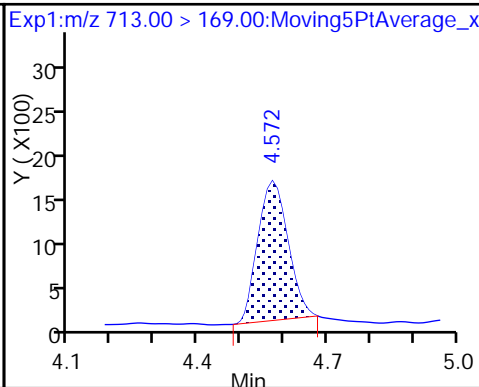
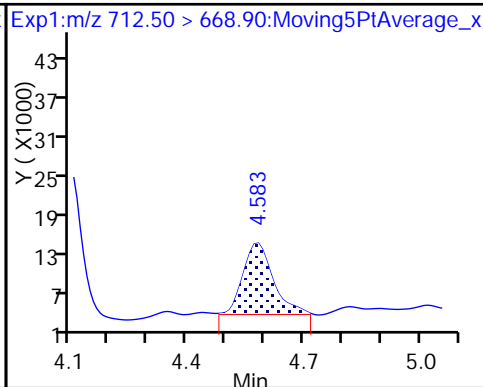
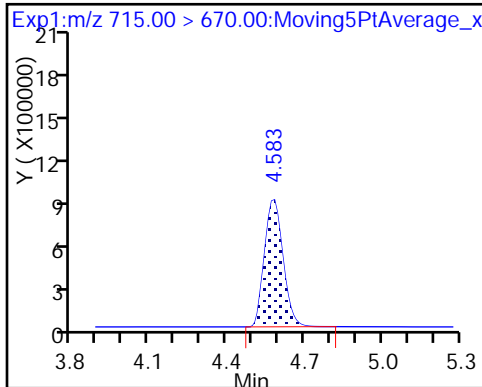
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid (M)

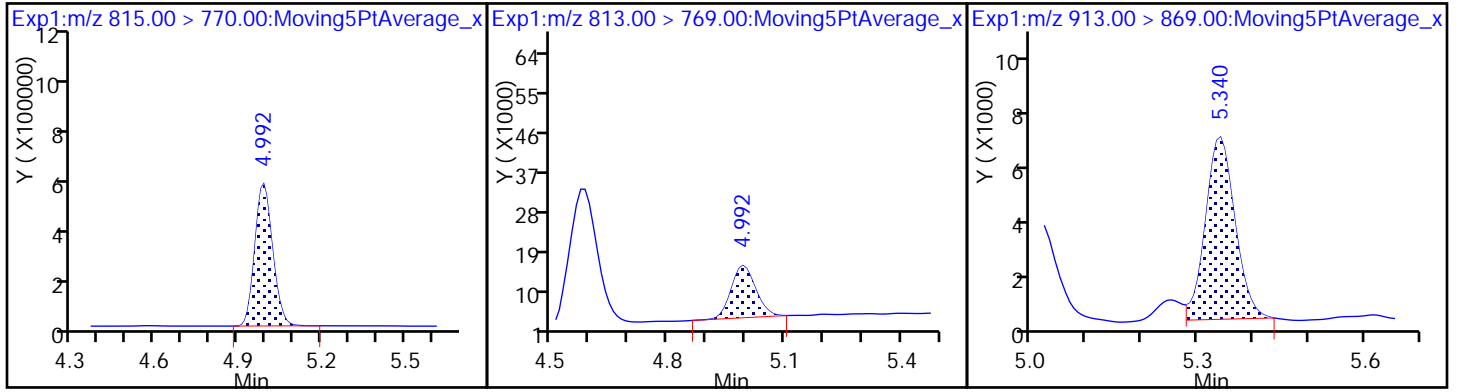
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



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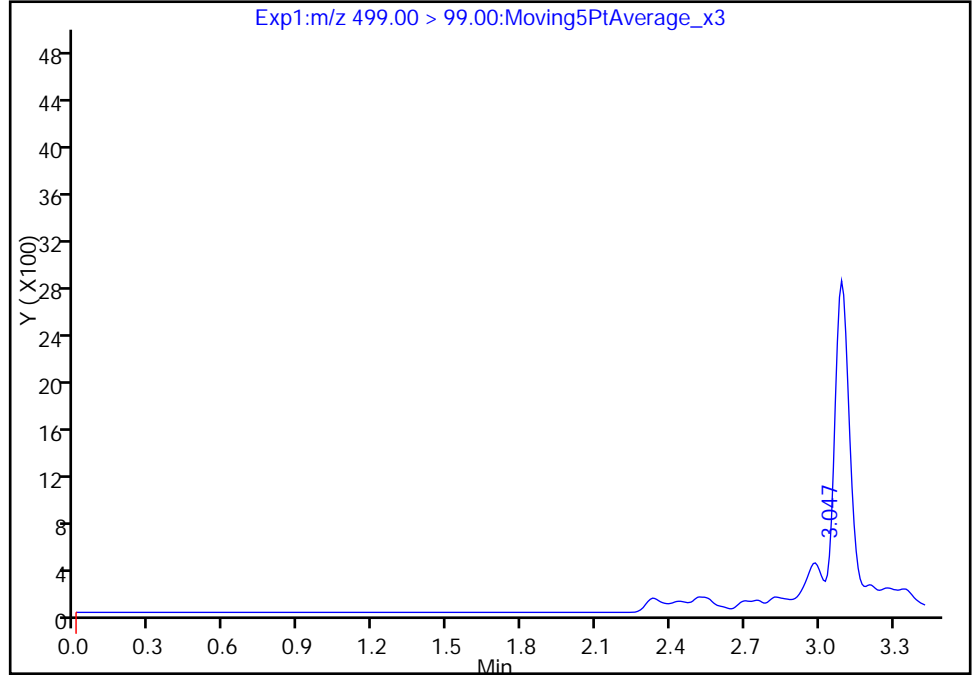
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_003.d
Injection Date: 20-Jul-2017 17:15:53 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

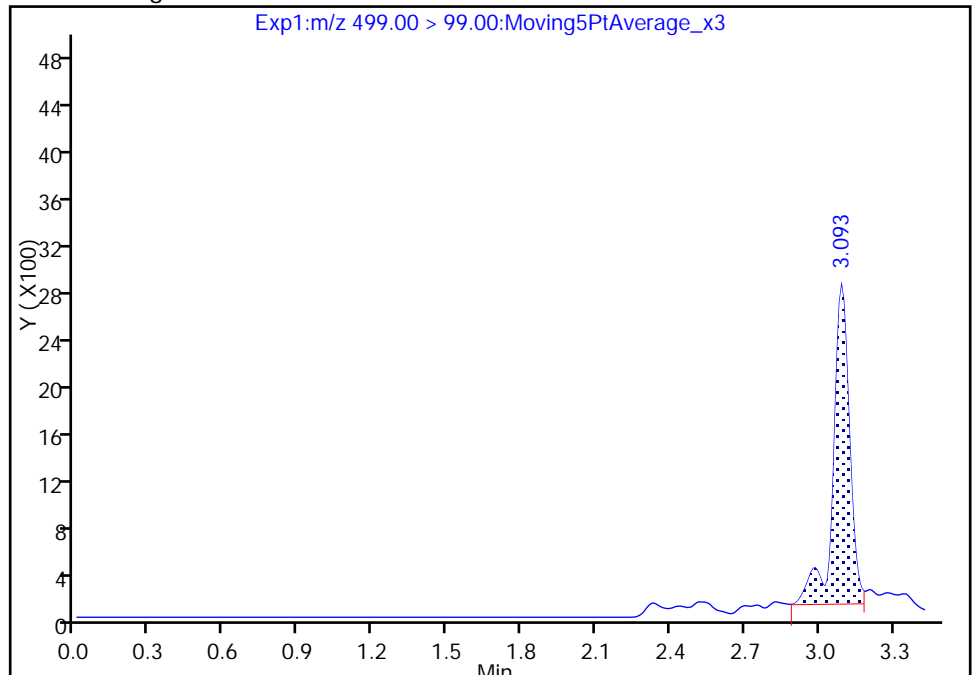
RT: 3.05
Area: 0
Amount: 0.480344
Amount Units: ng/ml

Processing Integration Results



RT: 3.09
Area: 12535
Amount: 0.493379
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 20-Jul-2017 18:19:14
Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

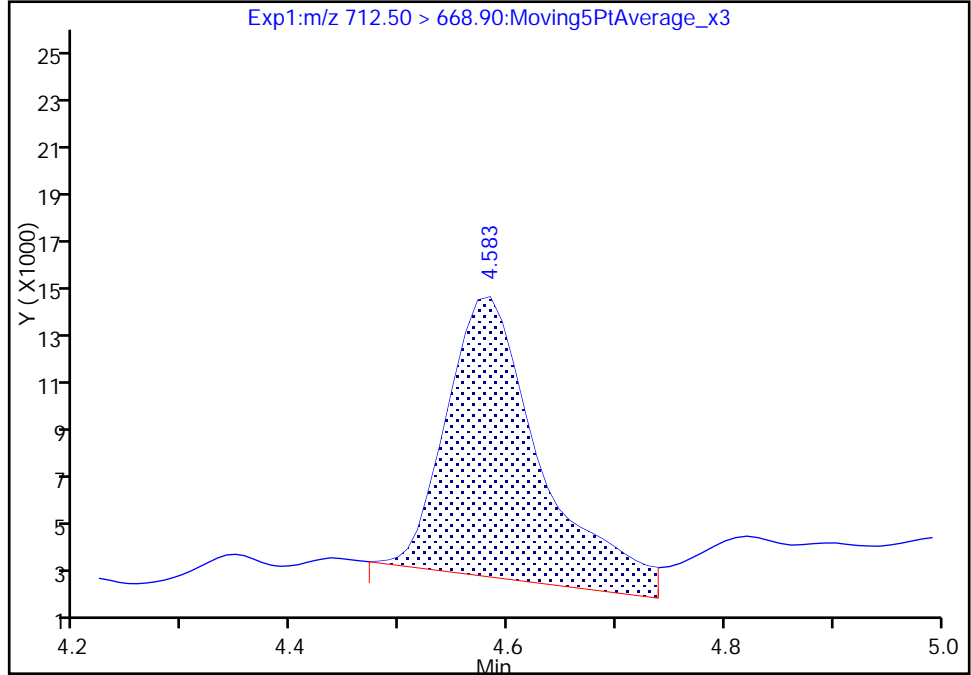
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_003.d
Injection Date: 20-Jul-2017 17:15:53 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

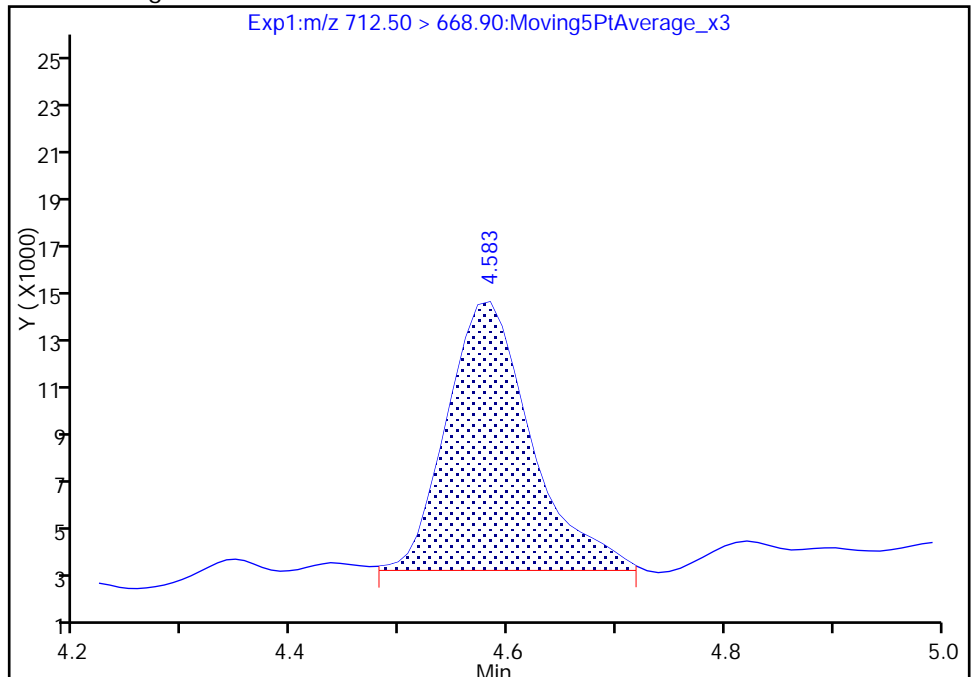
RT: 4.58
Area: 68031
Amount: 0.635272
Amount Units: ng/ml

Processing Integration Results



RT: 4.58
Area: 58614
Amount: 0.602188
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 20-Jul-2017 18:19:50
Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_004.d
 Lims ID: IC L2 Full
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 20-Jul-2017 17:22:49 ALS Bottle#: 29 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 21-Jul-2017 11:40:15 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:21:47

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.546 | 1.545 | 0.001 | 9436219 | 52.4 | | 105 | 33097 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.546 | 1.549 | -0.003 | 184401 | 1.07 | | 107 | 92.0 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.755 | 1.752 | 0.003 | 6529085 | 54.6 | | 109 | 56032 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.755 | 1.753 | 0.002 | 121725 | 0.9345 | | 93.5 | 71.2 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.773 | 1.777 | -0.004 | 158631 | NC | | | 7509 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.782 | 1.779 | 0.003 | 207251 | 0.8731 | | 98.8 | 157 | |
| | 298.90 > 99.00 | 1.782 | 1.779 | 0.003 | 88977 | | 2.33(0.00-0.00) | 98.8 | 182 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.983 | 1.985 | -0.002 | 48470 | 0.9417 | | 101 | 2443 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.029 | 2.024 | 0.005 | 107198 | 0.9794 | | 97.9 | 268 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.029 | 2.024 | 0.005 | 5838100 | 52.9 | | 106 | 30260 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.355 | 2.354 | 0.001 | 5129374 | 52.7 | | 105 | 29558 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.355 | 2.355 | 0.0 | 103969 | 1.00 | | 100 | 361 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.371 | 2.369 | 0.002 | 168436 | 0.9859 | | 108 | 218 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.371 | 2.369 | 0.002 | 7897552 | 49.3 | | 104 | 33343 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.685 | 2.684 | 0.001 | 1.000 | 42671 | 0.9371 | 98.8 | 1305 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.685 | 2.684 | 0.001 | | 2520393 | 47.9 | 101 | 22706 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.707 | 2.703 | 0.004 | | 4702447 | 50.0 | | 28490 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.707 | 2.706 | 0.001 | | 4727178 | 53.8 | 108 | 37012 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.707 | 2.710 | -0.003 | 1.000 | 96571 | 0.9763 | 97.6 | 16.6 |
| | 413.00 | > 169.00 | 2.707 | 2.710 | -0.003 | 1.000 | 65507 | 1.47(0.90-1.10) | 97.6 | 430 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.714 | 2.716 | -0.002 | 1.000 | 128302 | 0.8851 | 93.0 | 3866 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.076 | 3.078 | -0.002 | | 5903714 | 50.0 | 105 | 28334 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.076 | 3.080 | -0.004 | | 3689841 | 53.3 | 107 | 24283 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.076 | 3.080 | -0.004 | 1.000 | 115323 | 0.9030 | 97.3 | 1474 |
| | 499.00 | > 99.00 | 3.076 | 3.080 | -0.004 | 1.000 | 26516 | 4.35(0.90-1.10) | 97.3 | 249 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.084 | 3.081 | 0.003 | 1.000 | 70352 | 0.9533 | 95.3 | 169 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.420 | 3.422 | -0.002 | 1.000 | 185849 | 1.01 | 101 | 4416 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.420 | 3.422 | -0.002 | | 9933579 | 50.6 | 101 | 17833 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.429 | 3.428 | 0.001 | 1.000 | 37263 | 0.9778 | 102 | 1714 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.429 | 3.428 | 0.001 | | 1988005 | 50.7 | 106 | 21079 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.437 | 3.438 | -0.001 | 1.000 | 58871 | 0.9633 | 96.3 | 270 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.437 | 3.438 | -0.001 | | 3264948 | 54.0 | 108 | 12570 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.589 | 3.592 | -0.003 | | 1077600 | 49.1 | 98.2 | 7956 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.600 | 3.600 | 0.0 | 1.003 | 17484 | 0.8935 | 89.4 | 248 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.747 | 3.748 | -0.001 | 1.000 | 72566 | 0.9226 | 95.7 | 2655 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.756 | 3.757 | -0.001 | | 1187339 | 51.6 | 103 | 2886 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.766 | 3.766 | 0.0 | 1.003 | 20217 | 1.00 | 100 | 465 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.766 | 3.766 | 0.0 | 1.000 | 49779 | 0.8832 | 88.3 | 95.5 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.766 | 3.766 | 0.0 | | 2319108 | 55.2 | 110 | 10841 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.909 | 3.910 | -0.001 | 2392214 | 47.4 | 94.9 | 673 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.909 | 3.916 | -0.007 | 1.000 | 38635 | 0.9011 | 90.1 | 1727 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.064 | 4.059 | 0.005 | 1.000 | 40721 | 1.03 | 103 | 43.7 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.064 | 4.059 | 0.005 | 2099102 | 48.2 | 96.4 | 5171 | |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.091 | 4.095 | -0.004 | 2419802 | 47.5 | 95.1 | 5714 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.099 | 4.103 | -0.004 | 1.000 | 44664 | 1.00 | 99.5 | 1582 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.327 | 4.328 | -0.001 | 1.000 | 36276 | 1.02 | 102 | 13.2 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.568 | 4.566 | 0.002 | 4247031 | 52.2 | 104 | 11797 | |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.568 | 4.567 | 0.001 | 1.000 | 88585 | 1.08 | 108 | 9.0 |
| | 713.00 | > 169.00 | 4.557 | 4.567 | -0.010 | 0.998 | 11346 | 7.81(0.00-0.00) | 108 | 183 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 4.978 | 4.976 | 0.002 | 2097197 | 49.4 | 98.7 | 3883 | |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 4.978 | 4.979 | -0.001 | 1.000 | 62612 | 1.00 | 100 | 10.6 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.321 | 5.321 | 0.0 | 1.000 | 36195 | 0.9811 | 98.1 | 18.5 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L2_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_004.d

Injection Date: 20-Jul-2017 17:22:49

Instrument ID: A8_N

Lims ID: IC L2 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

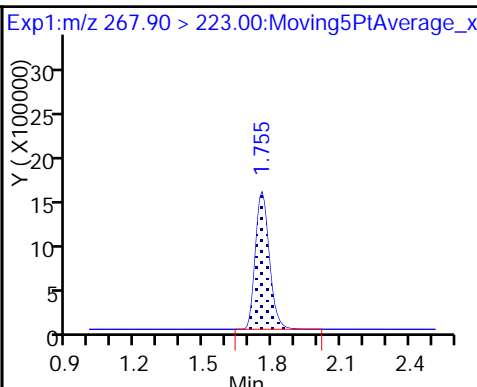
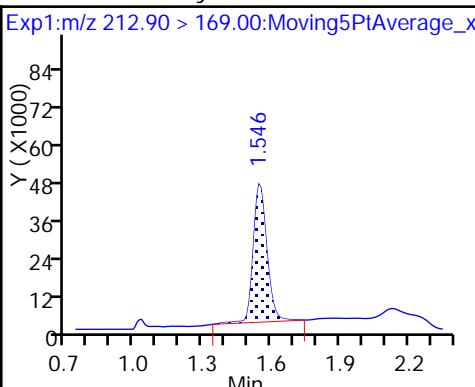
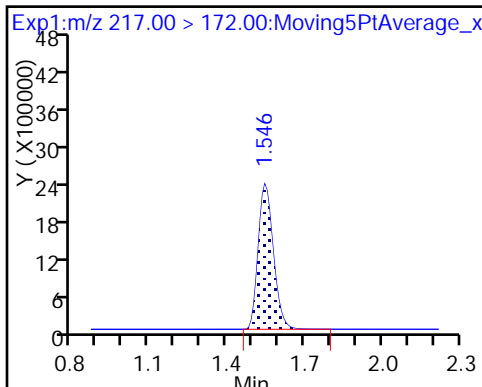
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

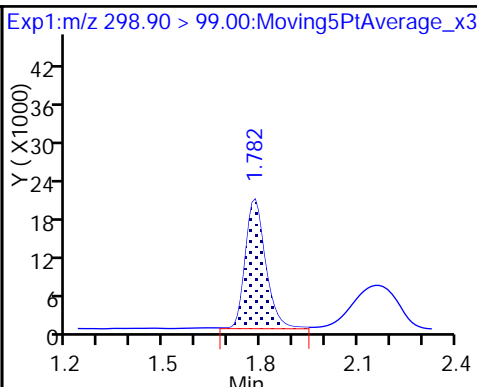
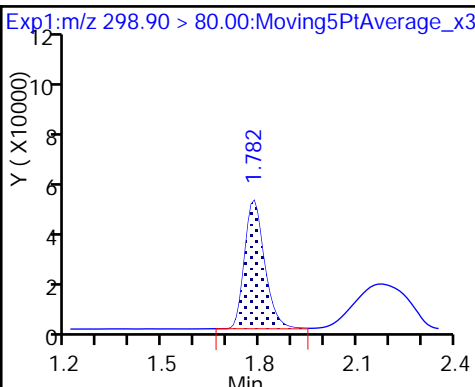
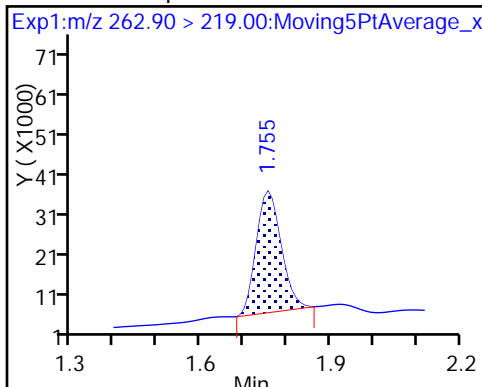
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

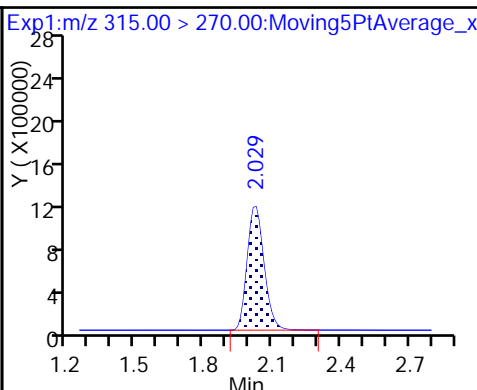
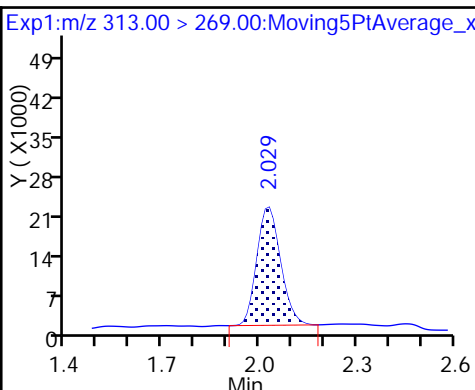
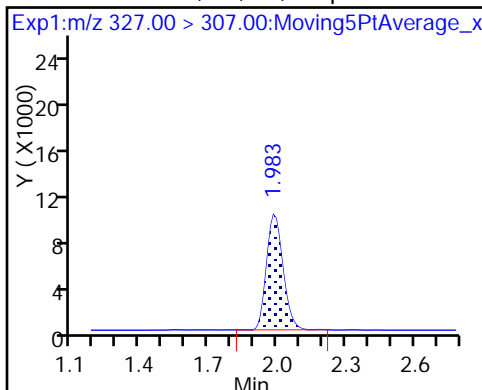
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

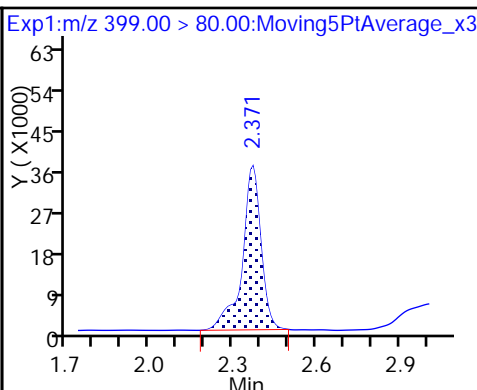
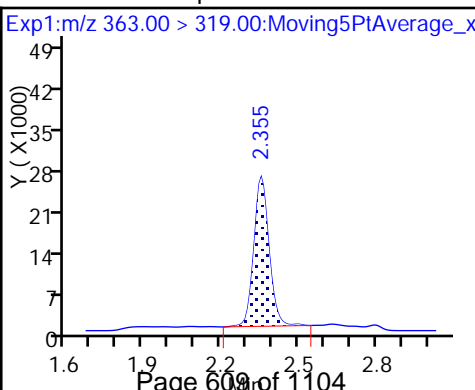
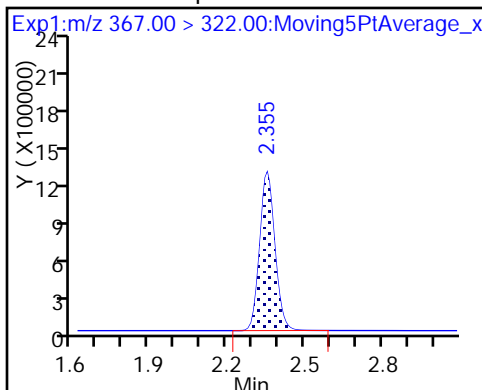
D 7 13C2 PFHxA



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

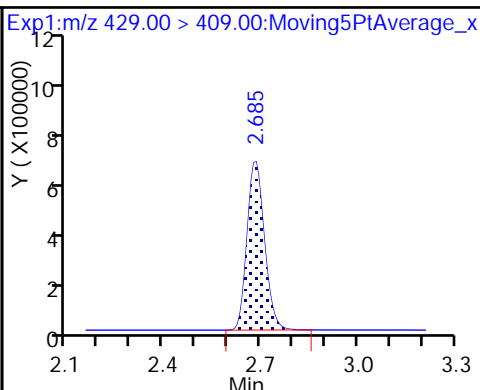
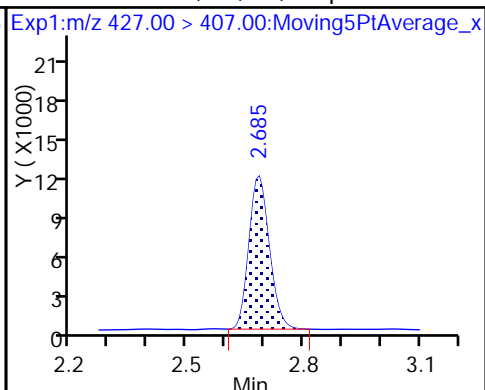
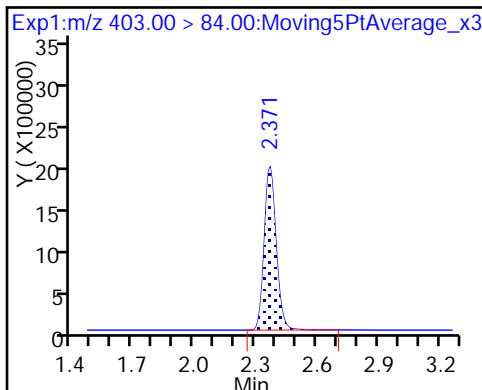
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

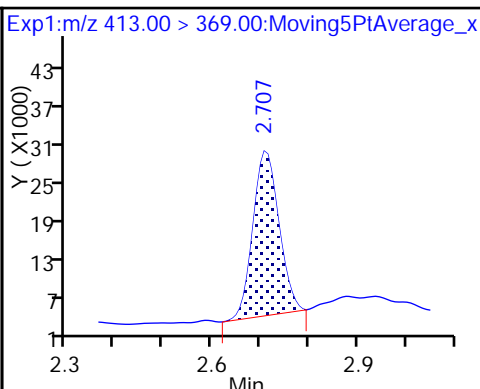
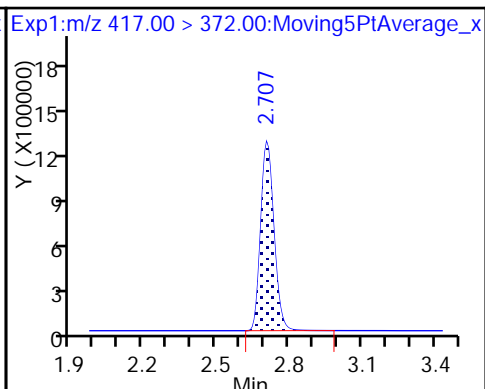
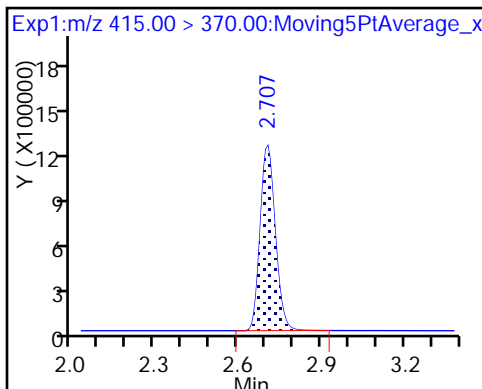
D 12 M2-6:2FTS



* 62 13C2-PFOA

D 14 13C4 PFOA

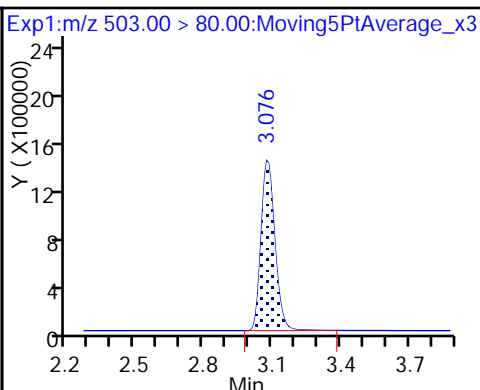
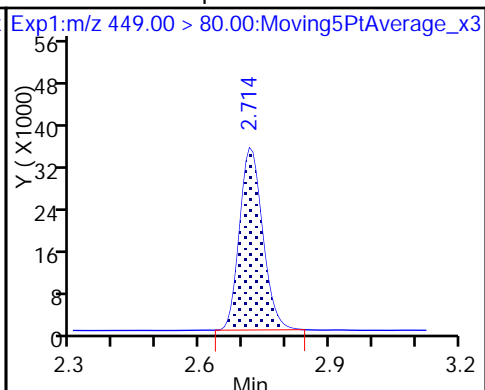
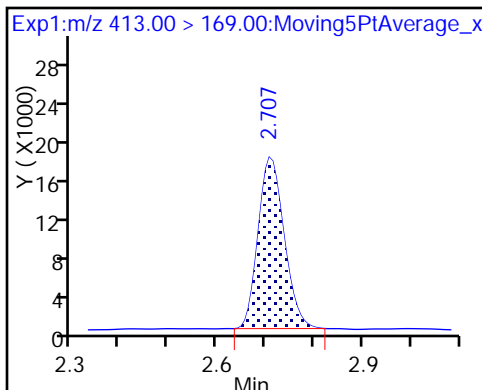
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

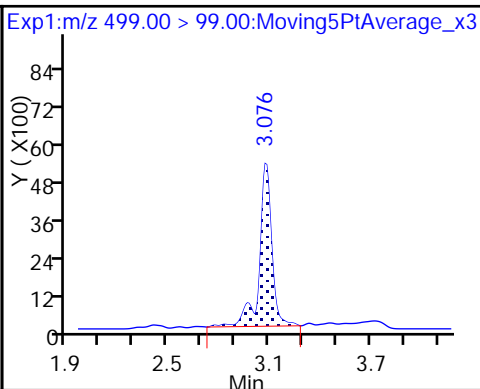
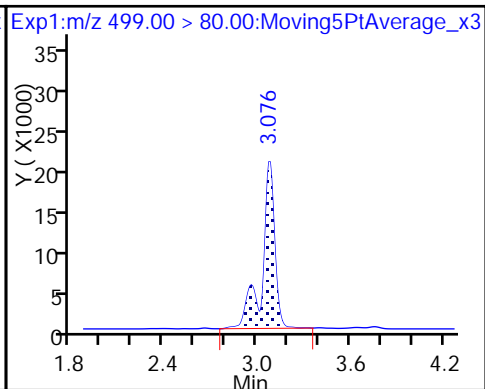
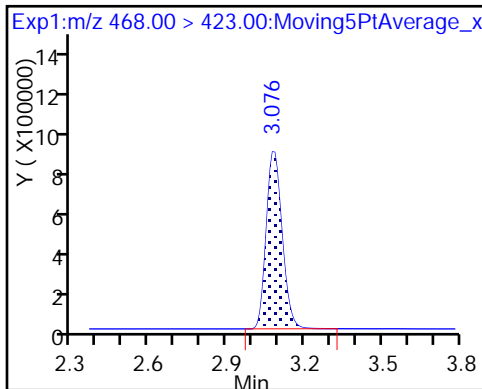
D 18 13C4 PFOS



D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid

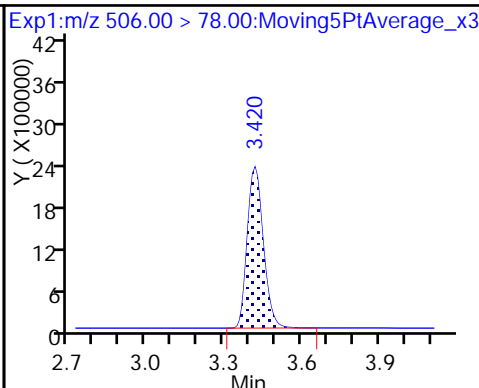
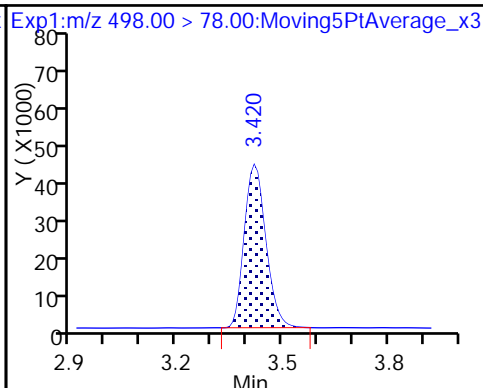
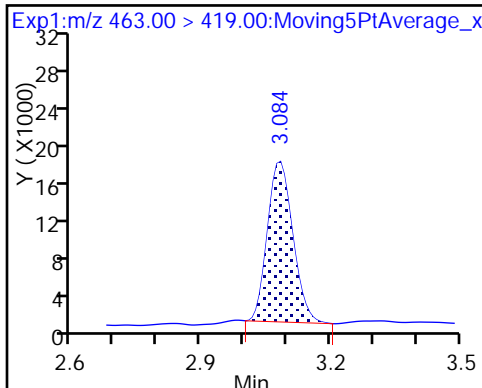
17 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid

22 Perfluorooctane Sulfonamide

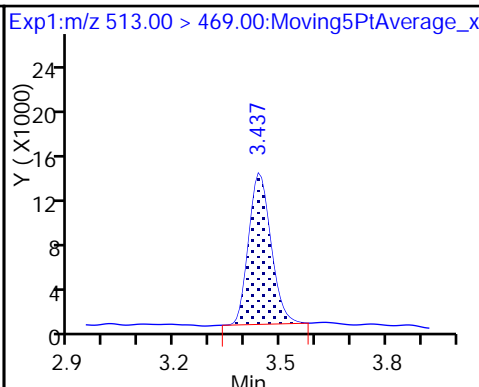
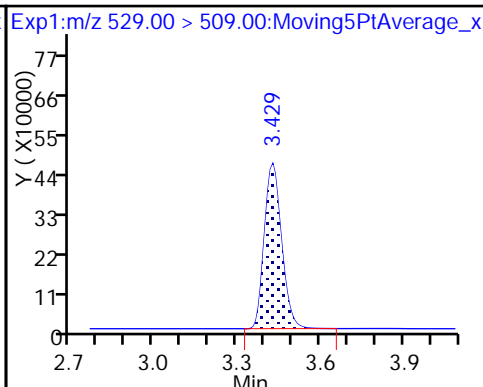
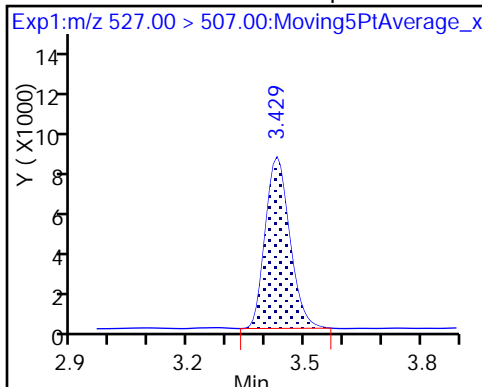
D 21 13C8 FOSA



25 Sodium 1H,1H,2H,2H-perfluorodecanoate

D 26 M2-8:2FTS

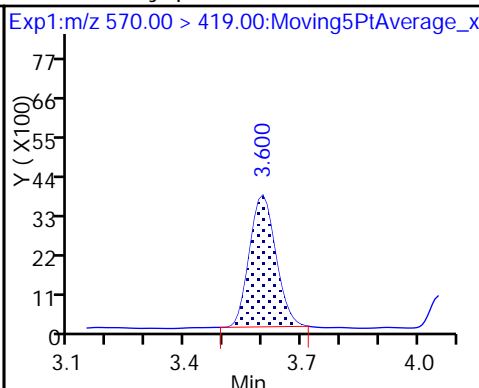
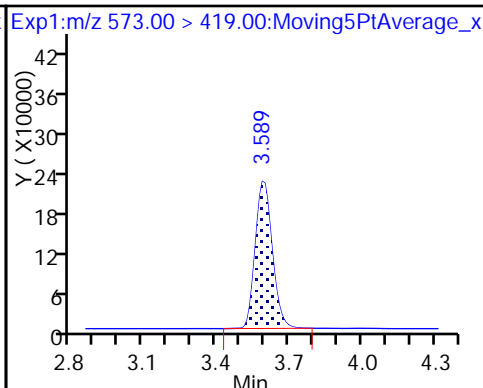
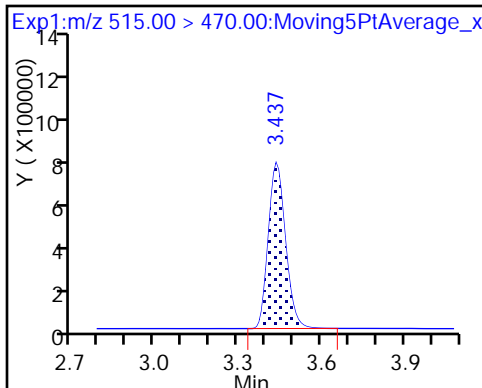
24 Perfluorodecanoic acid



D 23 13C2 PFDA

D 27 d3-NMeFOSAA

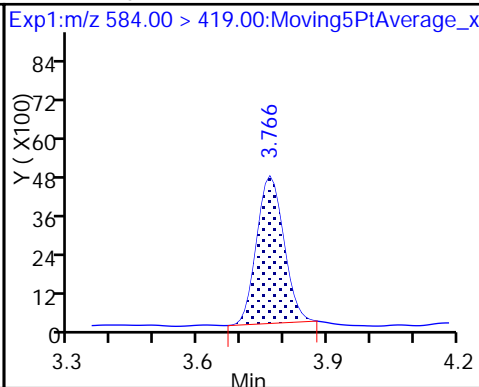
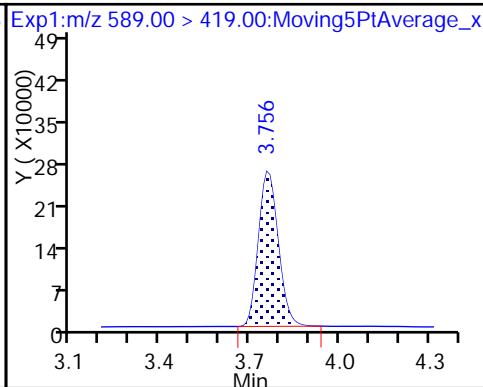
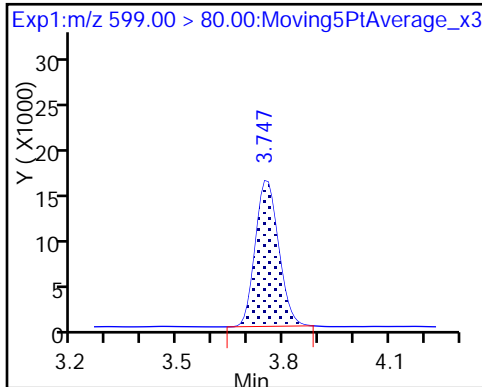
28 N-methyl perfluorooctane sulfonamide

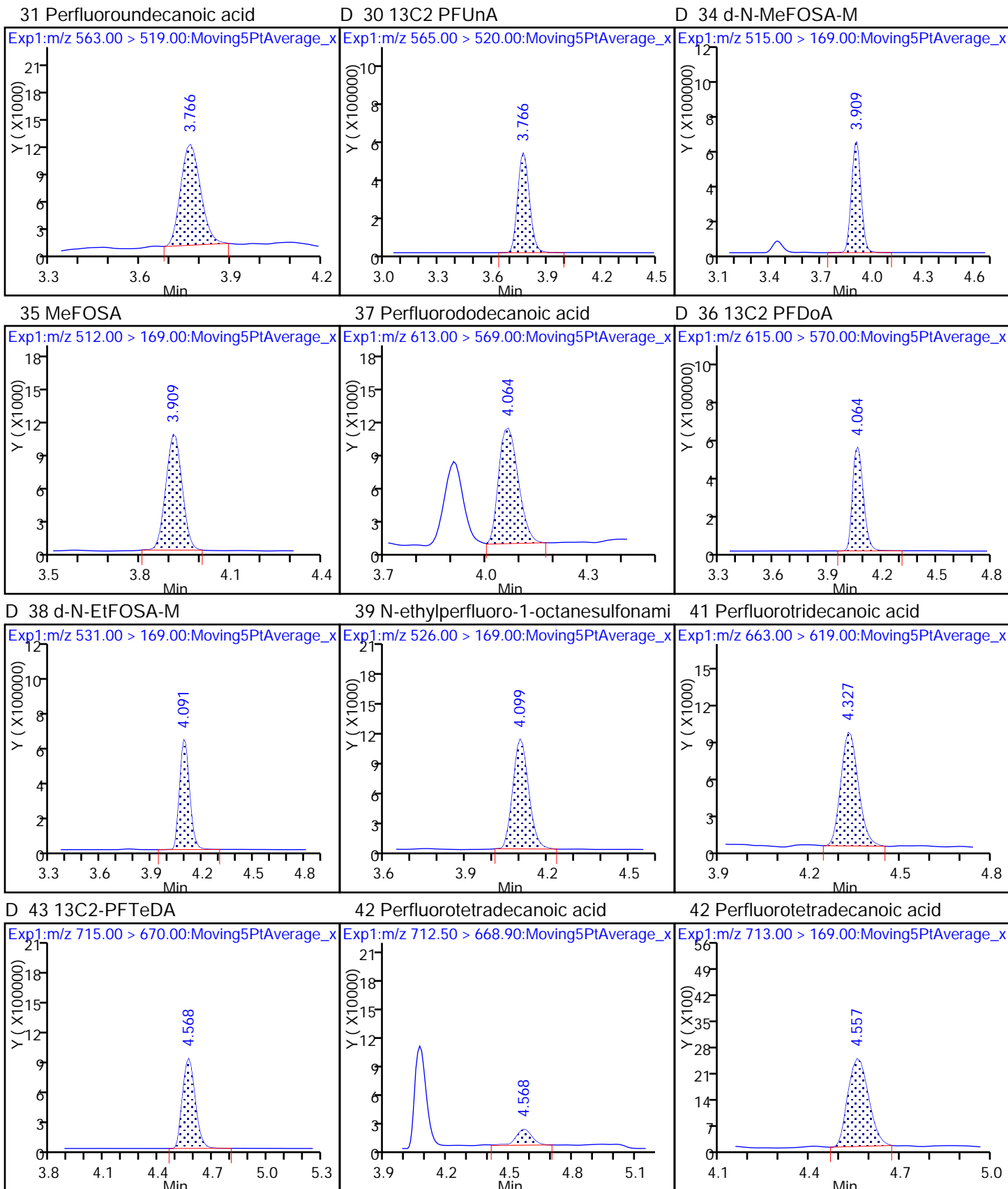


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamide

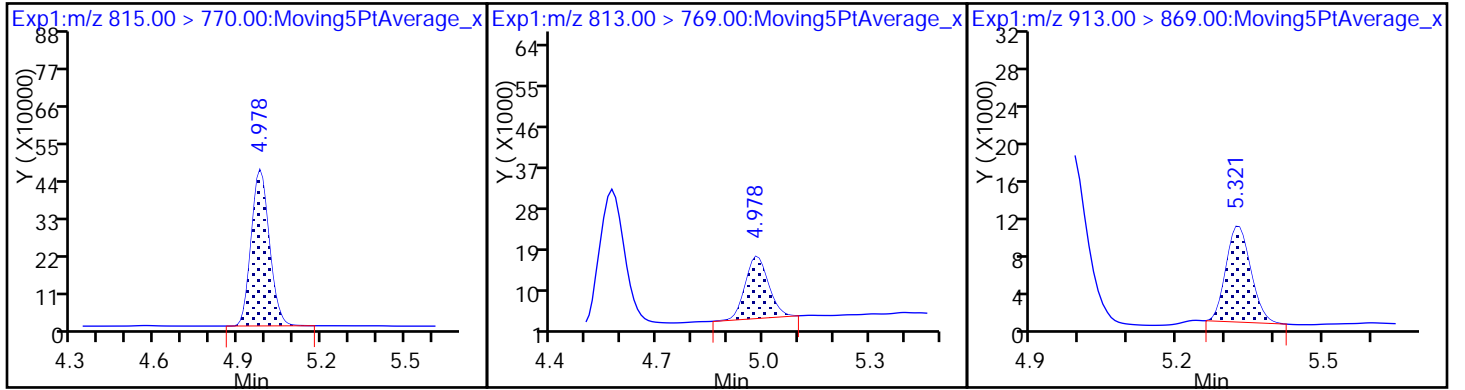




D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_005.d
 Lims ID: IC L3 Full
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 20-Jul-2017 17:29:45 ALS Bottle#: 30 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 21-Jul-2017 11:40:18 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:23:46

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.545 | 1.545 | 0.0 | 9579895 | 53.2 | | 106 | 29940 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.554 | 1.549 | 0.005 | 1.000 | 925332 | 5.30 | 106 | 478 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.763 | 1.752 | 0.011 | 6333208 | 53.0 | | 106 | 53427 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.763 | 1.753 | 0.010 | 1.000 | 668298 | 5.29 | 106 | 420 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.782 | 1.777 | 0.005 | 159845 | NC | | | 6236 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.791 | 1.779 | 0.012 | 1.000 | 1154707 | 5.00 | 113 | 795 | |
| | 298.90 > 99.00 | 1.782 | 1.779 | 0.003 | 0.995 | 454929 | 2.54(0.00-0.00) | 113 | 737 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.994 | 1.985 | 0.009 | 1.000 | 241314 | 4.52 | 96.9 | 12106 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.028 | 2.024 | 0.004 | 5844106 | 52.9 | | 106 | 29053 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.028 | 2.024 | 0.004 | 1.000 | 531793 | 4.85 | 97.1 | 1493 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.358 | 2.354 | 0.004 | 5087476 | 52.3 | | 105 | 30047 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.366 | 2.355 | 0.011 | 1.000 | 507848 | 4.95 | 98.9 | 1496 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.374 | 2.369 | 0.005 | 7689311 | 48.0 | | 101 | 40831 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.374 | 2.369 | 0.005 | 1.000 | 783004 | 4.71 | 103 | 974 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.689 | 2.684 | 0.005 | 2611787 | 49.7 | 105 | 28229 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.689 | 2.684 | 0.005 | 1.000 | 225835 | 4.79 | 101 | 6695 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.711 | 2.703 | 0.008 | | 4640669 | 50.0 | | 38542 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.718 | 2.706 | 0.012 | | 4806165 | 54.7 | 109 | 40915 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.718 | 2.710 | 0.008 | 1.000 | 500571 | 4.98 | 99.5 | 88.7 |
| | 413.00 | > 169.00 | 2.718 | 2.710 | 0.008 | 1.000 | 306435 | 1.63(0.90-1.10) | 99.5 | 1728 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.725 | 2.716 | 0.009 | 1.000 | 706250 | 5.12 | 108 | 11075 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.090 | 3.078 | 0.012 | | 5618820 | 47.6 | 99.6 | 49850 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.090 | 3.080 | 0.010 | 1.000 | 589410 | 4.85 | 105 | 4247 |
| | 499.00 | > 99.00 | 3.090 | 3.080 | 0.010 | 1.000 | 123794 | 4.76(0.90-1.10) | 105 | 1181 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.090 | 3.080 | 0.010 | | 3680912 | 53.1 | 106 | 25050 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.090 | 3.081 | 0.009 | 1.000 | 383423 | 5.21 | 104 | 952 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.428 | 3.422 | 0.006 | | 10514072 | 53.6 | 107 | 19088 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.428 | 3.422 | 0.006 | 1.000 | 994657 | 5.12 | 102 | 10553 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.436 | 3.428 | 0.008 | | 2008772 | 51.2 | 107 | 25796 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.436 | 3.428 | 0.008 | 1.000 | 192486 | 5.00 | 104 | 7399 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.444 | 3.438 | 0.006 | | 3301213 | 54.6 | 109 | 14113 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.444 | 3.438 | 0.006 | 1.000 | 312593 | 5.06 | 101 | 1266 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.599 | 3.592 | 0.007 | | 1159944 | 52.8 | 106 | 8334 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.609 | 3.600 | 0.009 | 1.003 | 103070 | 4.89 | 97.9 | 1537 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.755 | 3.748 | 0.007 | 1.000 | 398109 | 5.32 | 110 | 7375 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.765 | 3.757 | 0.008 | | 1241427 | 54.0 | 108 | 3591 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.775 | 3.766 | 0.009 | | 2352011 | 56.0 | 112 | 9037 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.775 | 3.766 | 0.009 | 1.000 | 257295 | 5.26 | 105 | 539 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.775 | 3.766 | 0.009 | 1.003 | 102763 | 4.87 | 97.4 | 2086 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.916 | 3.910 | 0.006 | | 2596651 | 51.5 | 103 | 740 | |
| 35 MeFOSA | 512.00 > 169.00 | 3.923 | 3.916 | 0.007 | 1.000 | 244390 | 5.25 | 105 | 4321 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.065 | 4.059 | 0.006 | | 2328581 | 53.5 | 107 | 5769 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.065 | 4.059 | 0.006 | 1.000 | 222314 | 5.06 | 101 | 225 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.100 | 4.095 | 0.005 | | 2607670 | 51.2 | 102 | 6615 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.108 | 4.103 | 0.005 | 1.000 | 248915 | 5.15 | 103 | 3829 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.337 | 4.328 | 0.009 | 1.000 | 200109 | 5.05 | 101 | 72.7 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.578 | 4.566 | 0.012 | | 4311299 | 53.0 | 106 | 12874 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.578 | 4.567 | 0.011 | 1.000 | 506153 | 5.58 | 112 | 47.6 | |
| | 713.00 > 169.00 | 4.567 | 4.567 | 0.0 | 0.998 | 58491 | | 8.65(0.00-0.00) | 112 | 863 |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 4.987 | 4.976 | 0.011 | | 2213998 | 52.1 | 104 | 4365 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 4.987 | 4.979 | 0.008 | 1.000 | 222901 | 4.88 | 97.5 | 36.5 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.329 | 5.321 | 0.008 | 1.000 | 198059 | 4.84 | 96.8 | 91.8 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L3_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_005.d

Injection Date: 20-Jul-2017 17:29:45

Instrument ID: A8_N

Lims ID: IC L3 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 30

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

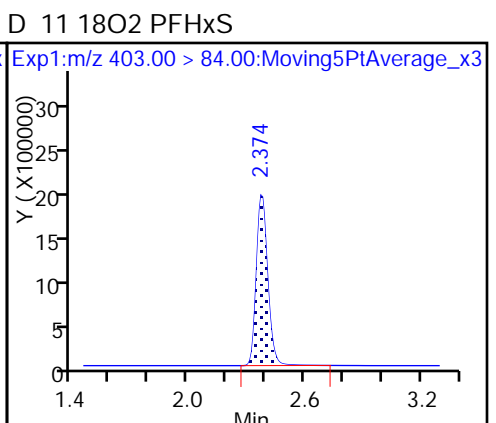
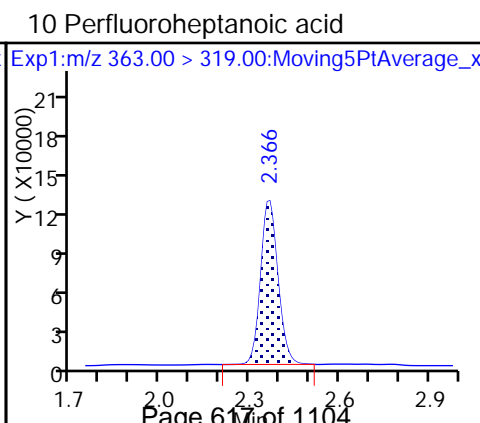
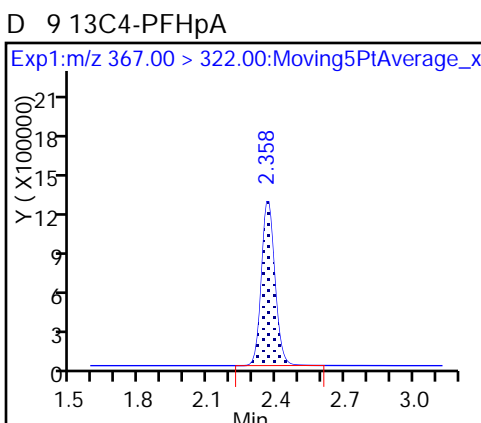
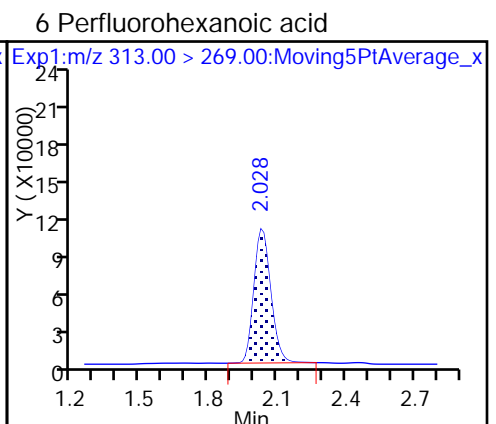
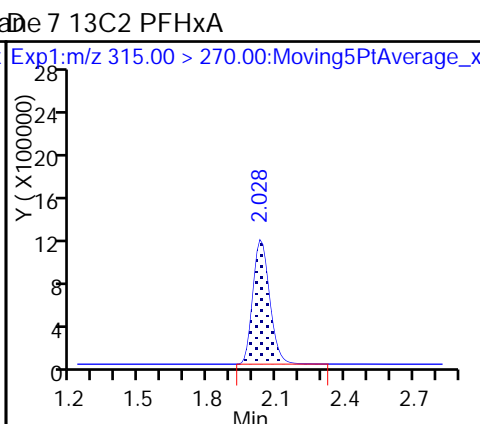
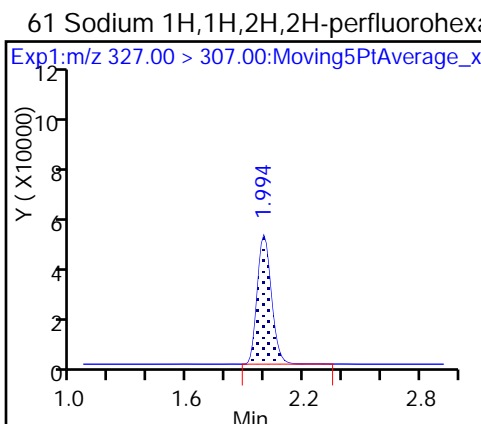
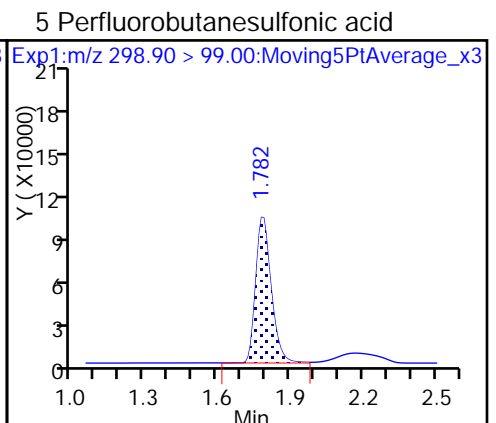
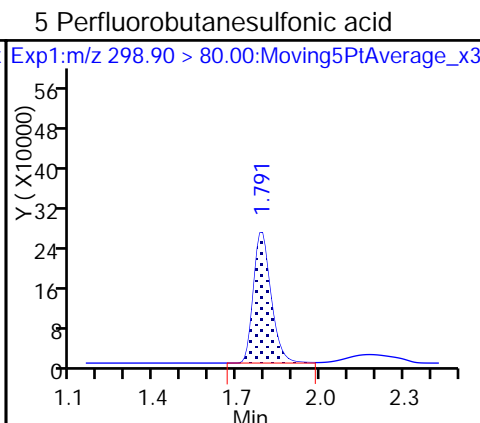
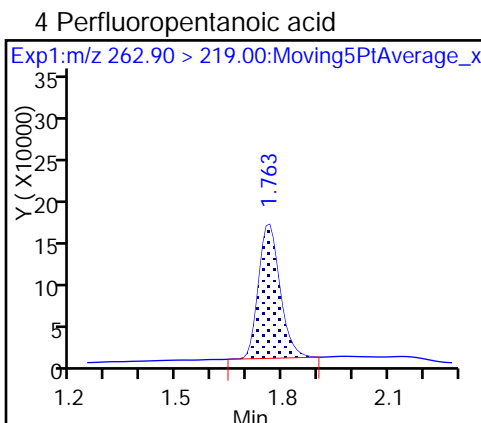
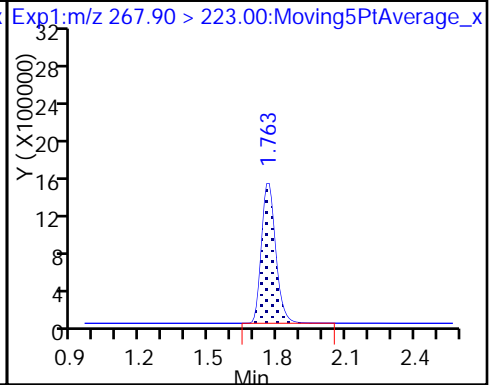
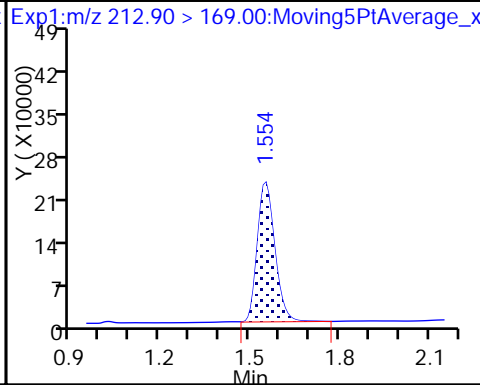
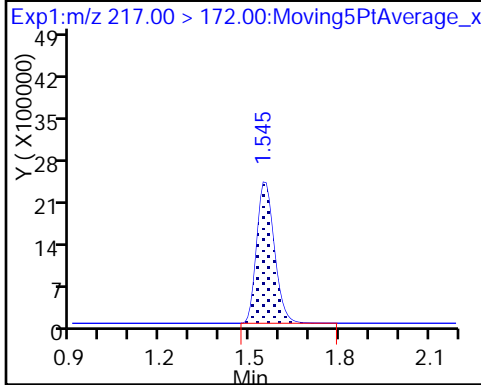
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

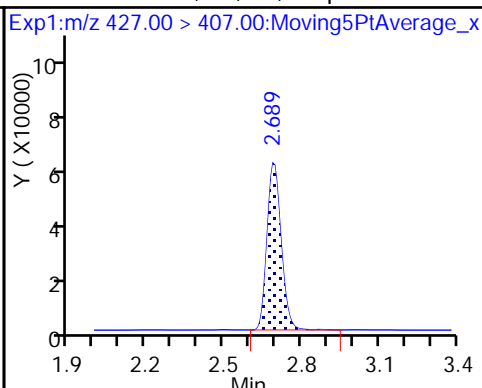
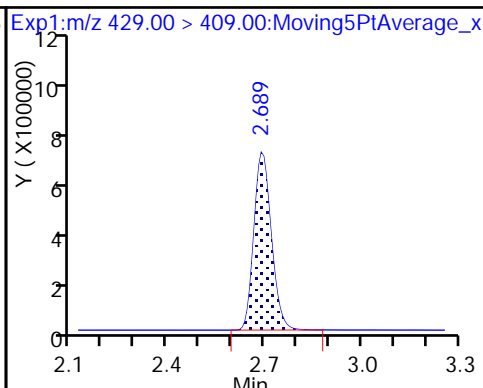
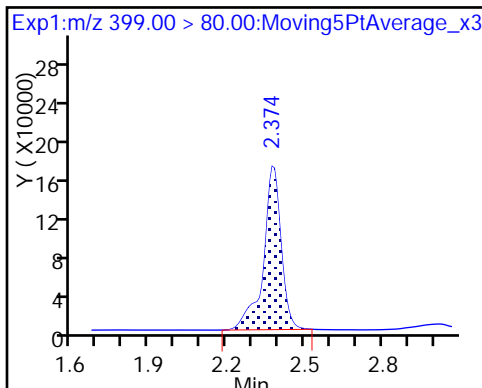
D 3 13C5-PFPeA



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

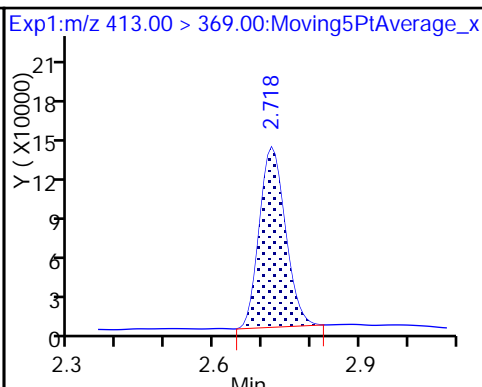
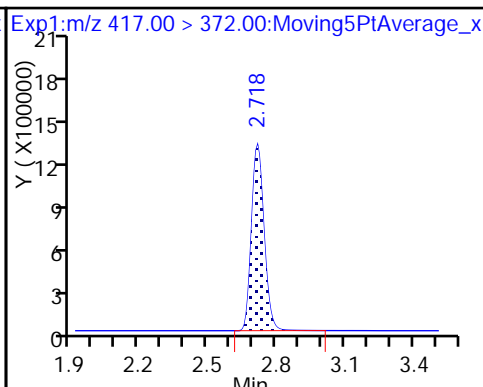
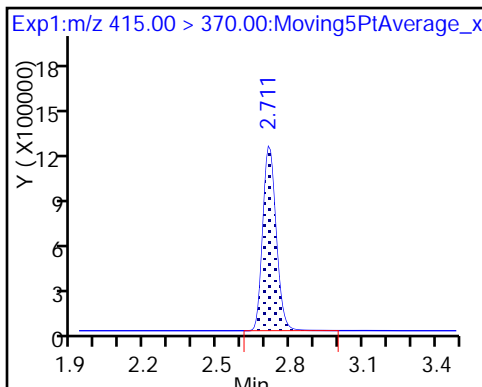
13 Sodium 1H,1H,2H,2H-perfluorooctane



* 62 13C2-PFOA

D 14 13C4 PFOA

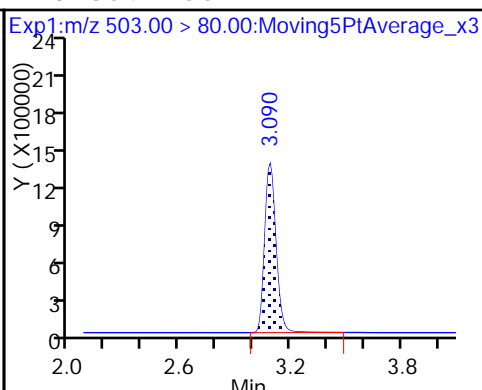
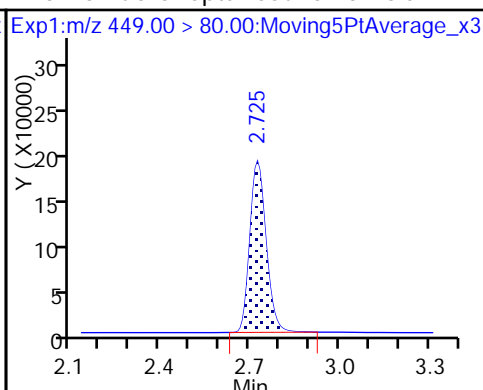
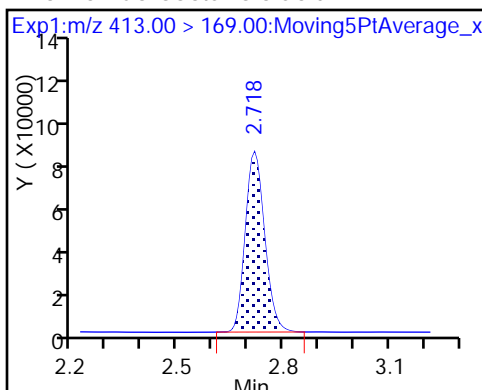
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

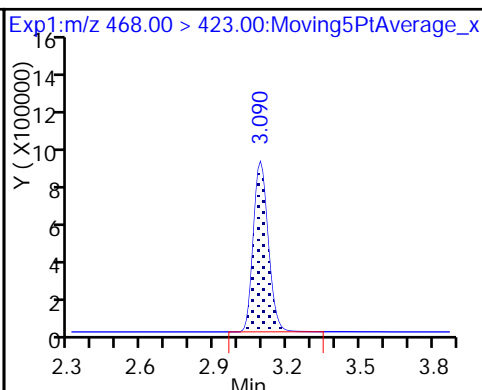
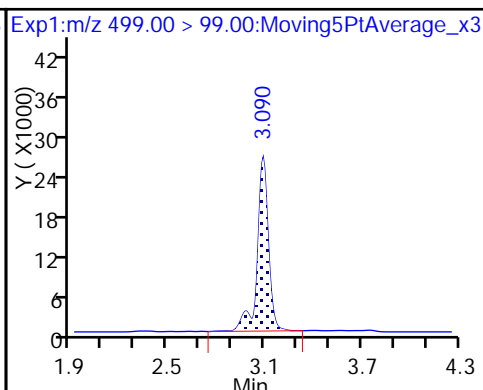
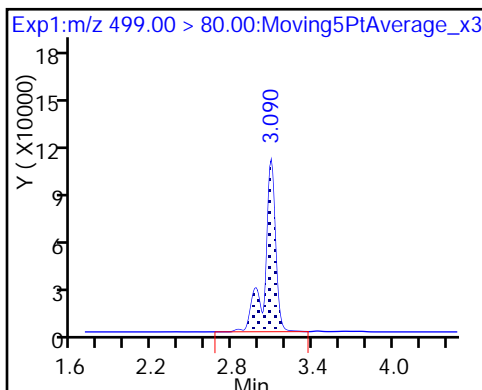
D 18 13C4 PFOS

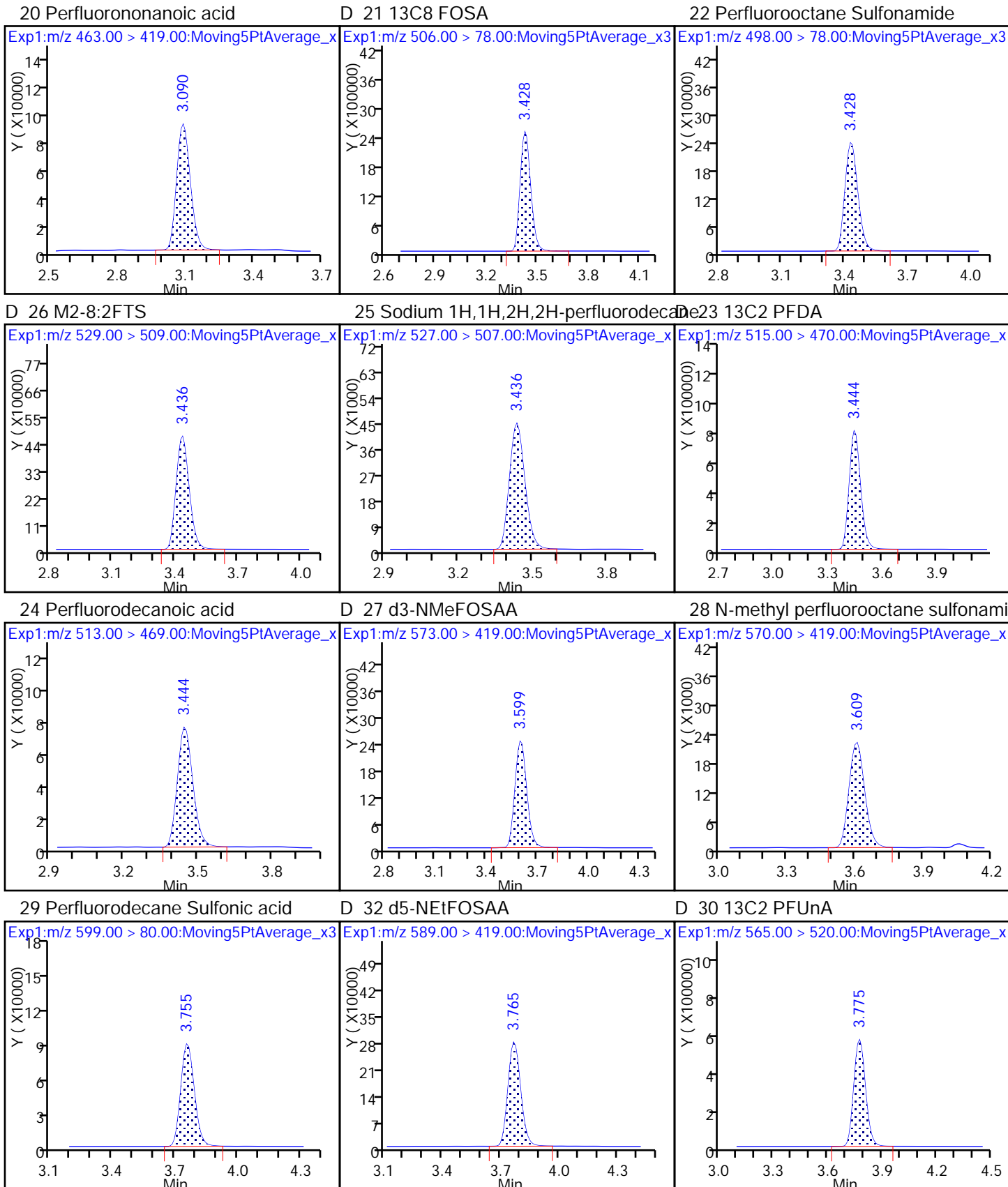


17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

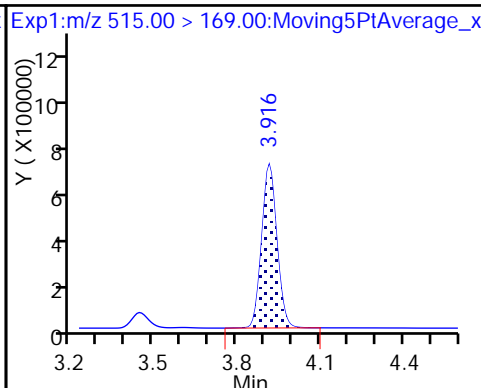
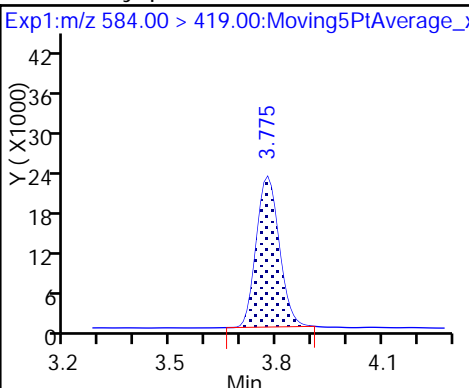
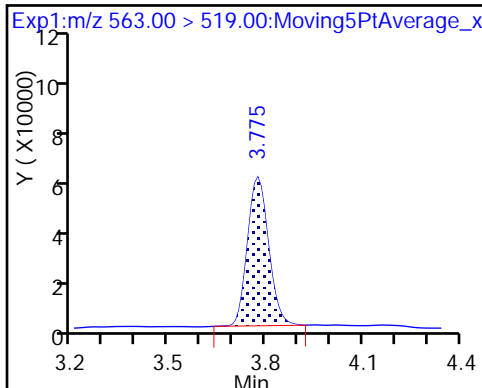




31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid D

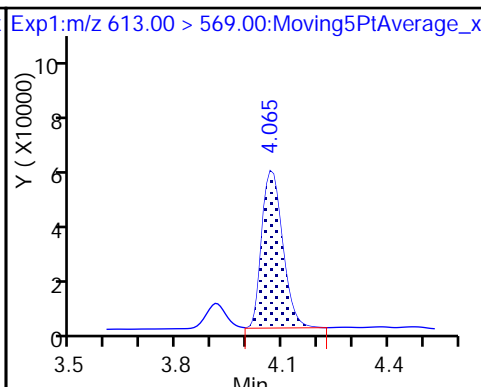
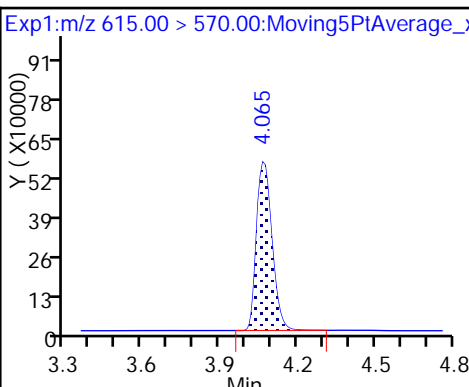
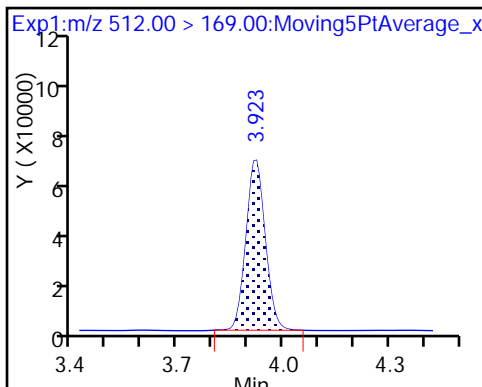
34 d-N-MeFOSA-M



35 MeFOSA

D 36 13C2 PFDaA

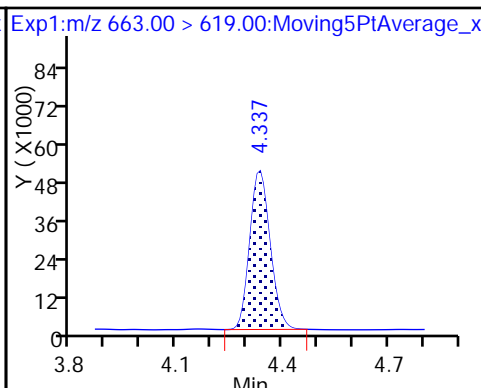
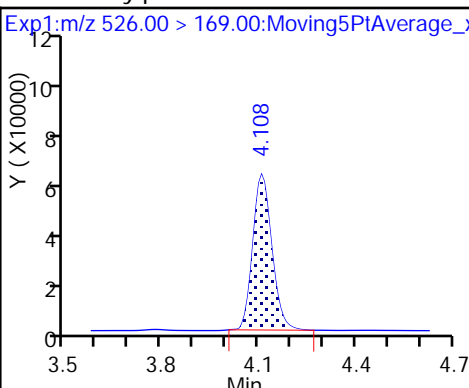
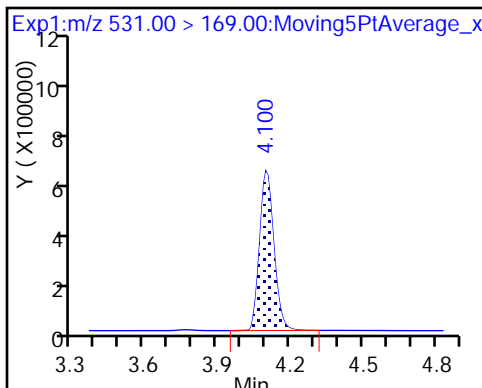
37 Perfluorododecanoic acid



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

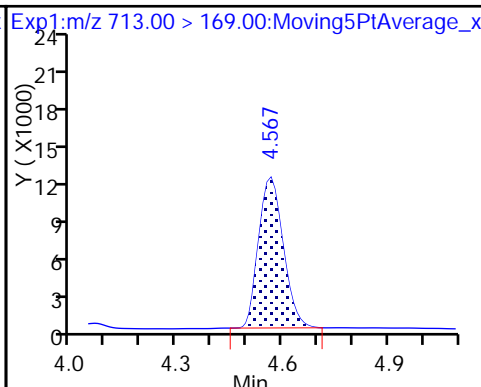
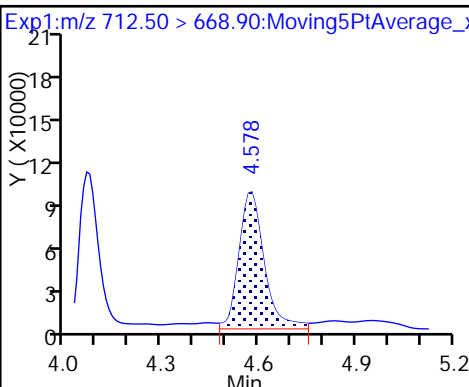
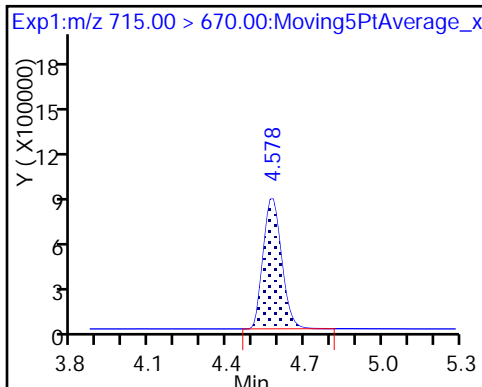
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

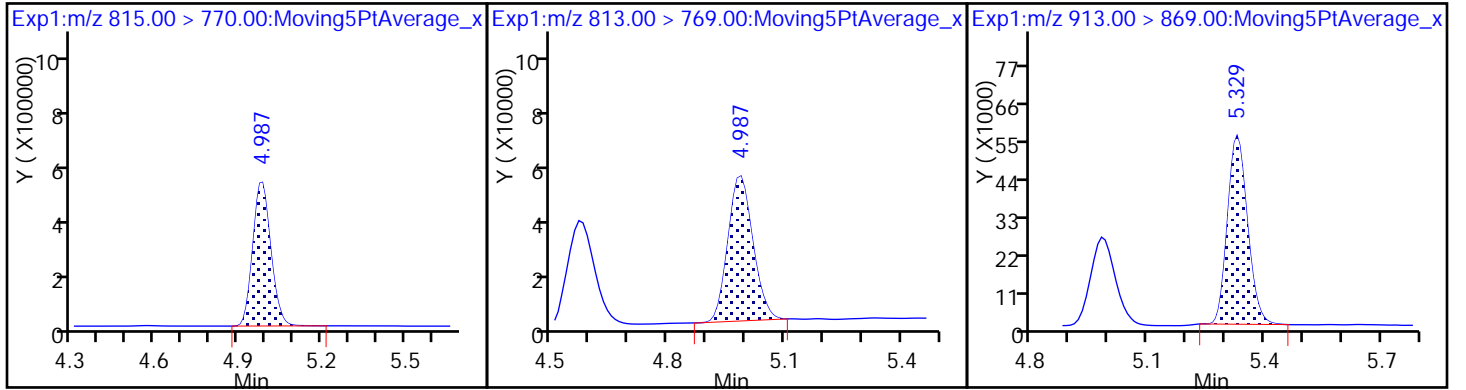
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

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 Lims ID: IC L4 Full
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 20-Jul-2017 17:36:41 ALS Bottle#: 31 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 21-Jul-2017 11:40:21 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:24:10

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.536 | 1.545 | -0.009 | 9286597 | 51.6 | | 103 | 31449 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.545 | 1.549 | -0.004 | 3426995 | 20.3 | | 101 | 1538 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.745 | 1.752 | -0.007 | 6079990 | 50.8 | | 102 | 50460 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.745 | 1.753 | -0.008 | 2589050 | 21.3 | | 107 | 1653 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.773 | 1.777 | -0.004 | 156305 | NC | | | 9045 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.773 | 1.779 | -0.006 | 4293133 | 18.7 | | 106 | 2860 | |
| | 298.90 > 99.00 | 1.773 | 1.779 | -0.006 | 1665381 | | 2.58(0.00-0.00) | 106 | 2532 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.971 | 1.985 | -0.014 | 1008354 | 20.3 | | 109 | 40144 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.017 | 2.024 | -0.007 | 2139637 | 20.0 | | 99.8 | 5493 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.017 | 2.024 | -0.007 | 5716524 | 51.8 | | 104 | 32388 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.343 | 2.354 | -0.011 | 5061975 | 52.0 | | 104 | 27219 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.343 | 2.355 | -0.012 | 2097220 | 20.5 | | 103 | 5700 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.359 | 2.369 | -0.010 | 3044035 | 18.4 | | 101 | 2408 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.359 | 2.369 | -0.010 | 7629615 | 47.6 | | 101 | 42166 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags | |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|-------|------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.676 | 2.684 | -0.008 | 1.000 | 874570 | 19.9 | 105 | 14507 | |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.676 | 2.684 | -0.008 | | 2434393 | 46.3 | 97.5 | 25594 | |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.698 | 2.703 | -0.005 | | 4644126 | 50.0 | | 38178 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.698 | 2.706 | -0.008 | | 4635535 | 52.8 | 106 | 28007 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.705 | 2.710 | -0.005 | 1.000 | 1918515 | 19.8 | 98.9 | 305 | |
| | 413.00 | > 169.00 | 2.705 | 2.710 | -0.005 | 1.000 | 1181148 | | 1.62(0.90-1.10) | 98.9 | 4961 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.705 | 2.716 | -0.011 | 1.000 | 2842525 | 20.1 | 106 | 30364 | |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.072 | 3.078 | -0.006 | | 5757051 | 48.8 | 102 | 27732 | |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.072 | 3.080 | -0.008 | | 3573960 | 51.6 | 103 | 23232 | |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.072 | 3.080 | -0.008 | 1.000 | 2262384 | 18.2 | 97.9 | 7529 | |
| | 499.00 | > 99.00 | 3.072 | 3.080 | -0.008 | 1.000 | 477809 | | 4.73(0.90-1.10) | 97.9 | 3903 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.072 | 3.081 | -0.009 | 1.000 | 1448390 | 20.3 | 101 | 3289 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.417 | 3.422 | -0.005 | 1.000 | 3778234 | 20.0 | 99.8 | 18882 | |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.417 | 3.422 | -0.005 | | 10250601 | 52.2 | 104 | 18304 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.426 | 3.428 | -0.002 | 1.000 | 694740 | 18.5 | 96.8 | 13423 | |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.426 | 3.428 | -0.002 | | 1954799 | 49.8 | 104 | 22680 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.434 | 3.438 | -0.004 | 1.000 | 1189794 | 20.6 | 103 | 4872 | |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.434 | 3.438 | -0.004 | | 3083355 | 51.0 | 102 | 14587 | |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.587 | 3.592 | -0.005 | | 1124094 | 51.2 | 102 | 7561 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.597 | 3.600 | -0.003 | 1.003 | 406426 | 19.9 | 99.6 | 3154 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.743 | 3.748 | -0.005 | 1.000 | 1438851 | 18.8 | 97.3 | 11319 | |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.753 | 3.757 | -0.004 | | 1185817 | 51.6 | 103 | 3770 | |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.763 | 3.766 | -0.003 | 1.003 | 388851 | 19.3 | 96.5 | 4753 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.763 | 3.766 | -0.003 | 1.000 | 872446 | 21.7 | 108 | 1661 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.763 | 3.766 | -0.003 | | 1984157 | 47.3 | 94.5 | 7396 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.907 | 3.910 | -0.003 | 2484961 | 49.3 | 98.6 | 707 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.915 | 3.916 | -0.001 | 1.000 | 898240 | 20.2 | 101 | 6048 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.055 | 4.059 | -0.004 | 1.000 | 811349 | 19.5 | 97.3 | 831 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.055 | 4.059 | -0.004 | | 2208104 | 50.7 | 101 | 4564 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.090 | 4.095 | -0.005 | | 2558301 | 50.2 | 100 | 6590 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.099 | 4.103 | -0.004 | 1.000 | 926942 | 19.5 | 97.7 | 5383 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.326 | 4.328 | -0.002 | 1.000 | 764621 | 20.3 | 102 | 285 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.562 | 4.566 | -0.004 | | 4030828 | 49.6 | 99.1 | 14420 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.562 | 4.567 | -0.005 | 1.000 | 1563632 | 18.2 | 90.9 | 194 |
| | 713.00 | > 169.00 | 4.550 | 4.567 | -0.017 | 0.998 | 206190 | 7.58(0.00-0.00) | 90.9 | 2338 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 4.973 | 4.976 | -0.003 | | 2179702 | 51.3 | 103 | 3650 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 4.982 | 4.979 | 0.003 | 1.000 | 816435 | 21.0 | 105 | 139 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.326 | 5.321 | 0.005 | 1.000 | 727856 | 18.8 | 93.8 | 299 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L4_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_006.d

Injection Date: 20-Jul-2017 17:36:41

Instrument ID: A8_N

Lims ID: IC L4 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

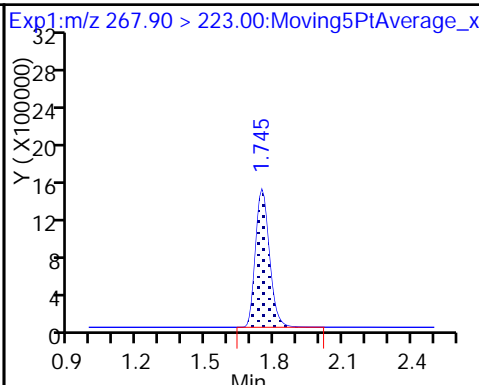
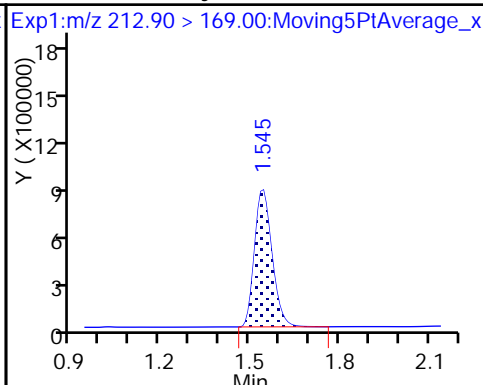
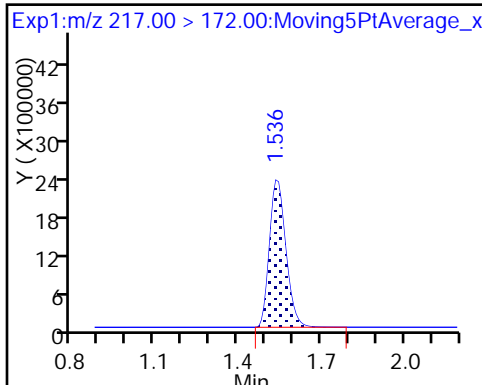
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

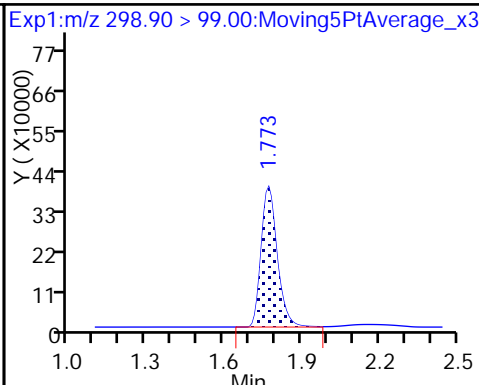
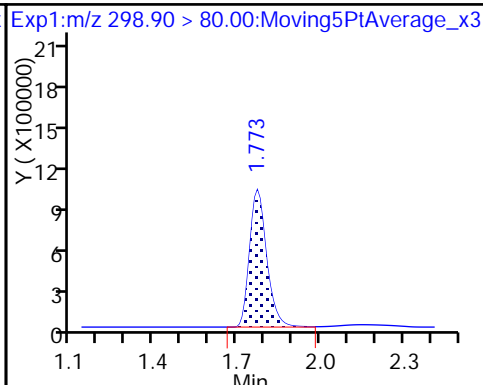
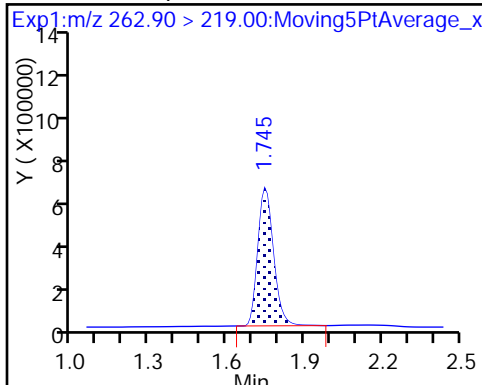
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

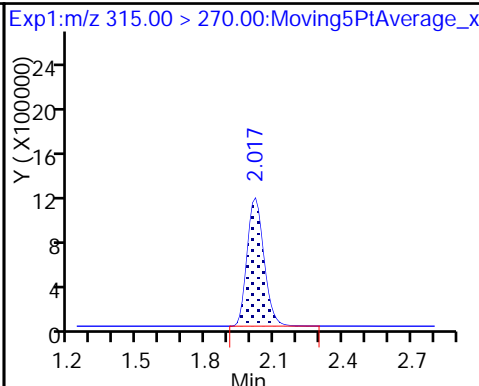
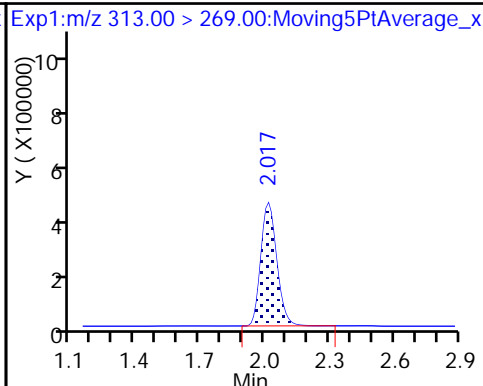
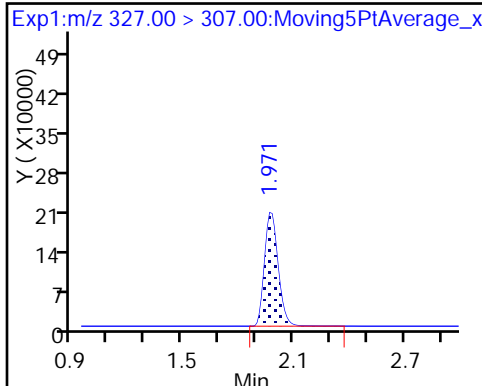
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

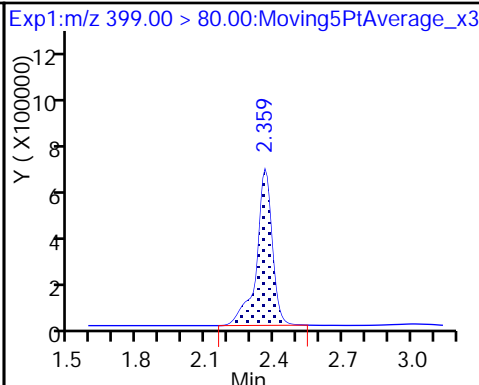
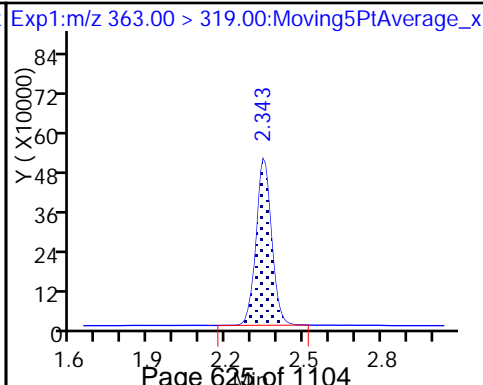
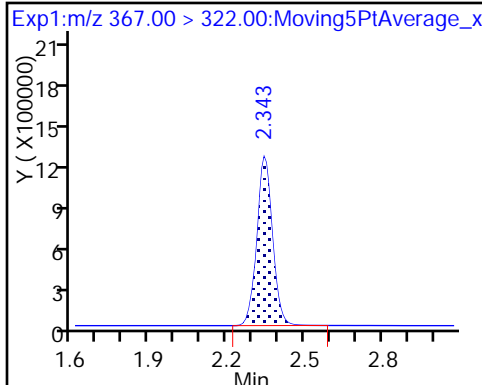
D 7 13C2 PFHxA



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

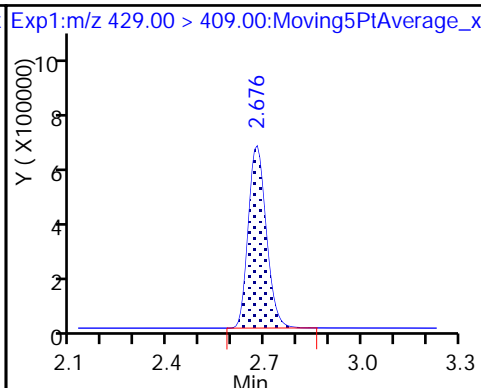
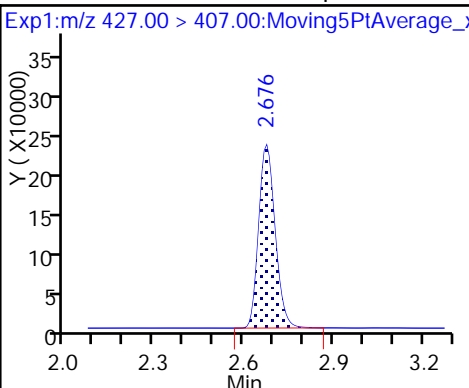
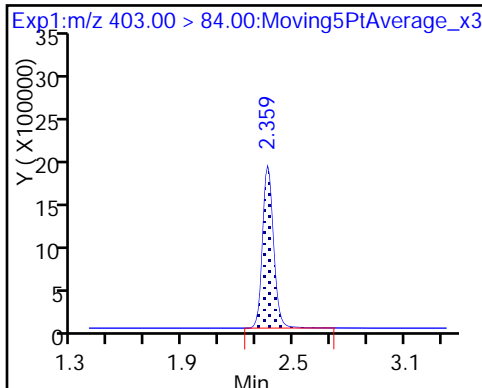
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecane

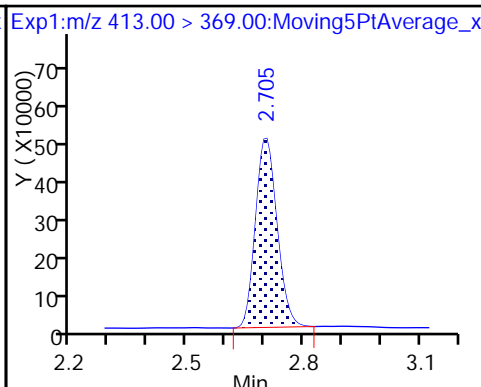
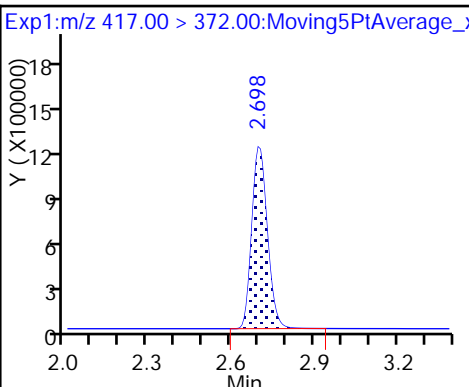
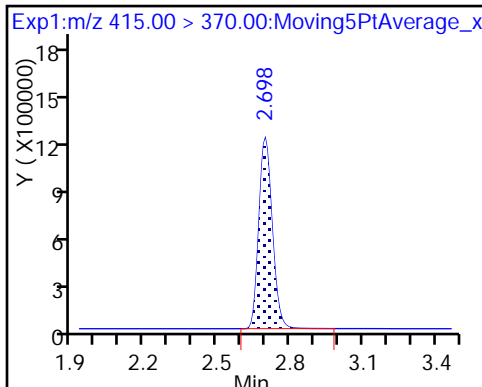
D 12 M2-6:2FTS



* 62 13C2-PFOA

D 14 13C4 PFOA

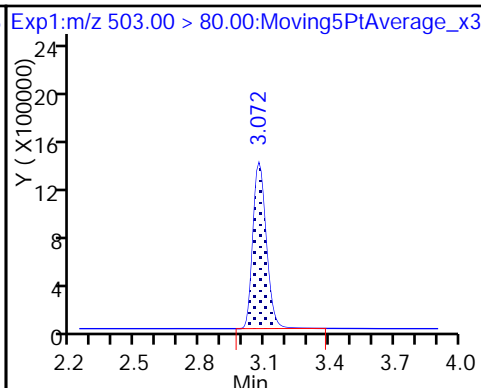
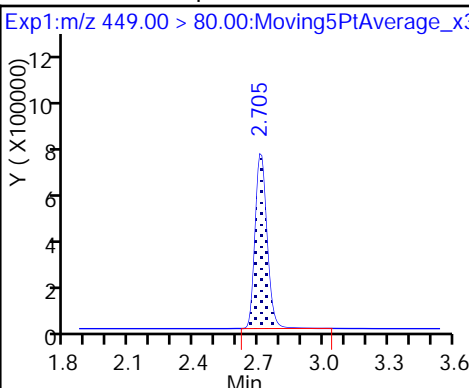
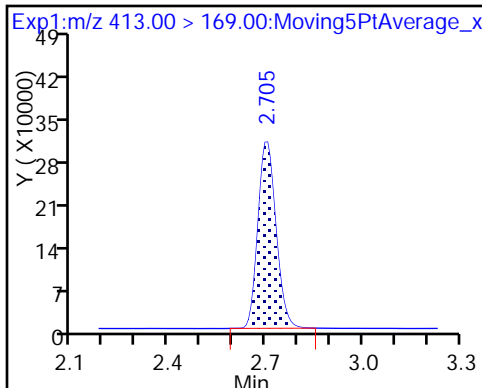
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

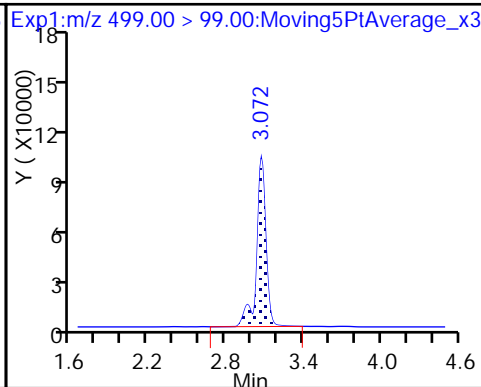
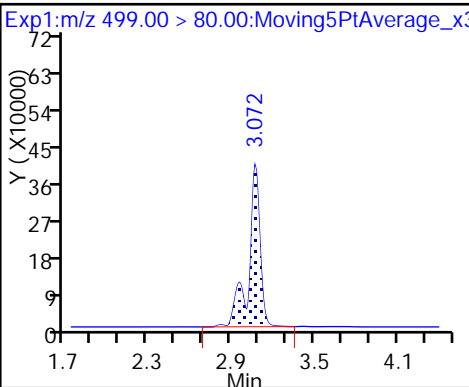
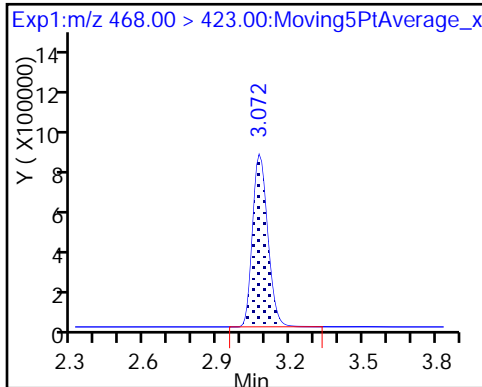
D 18 13C4 PFOS



D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid

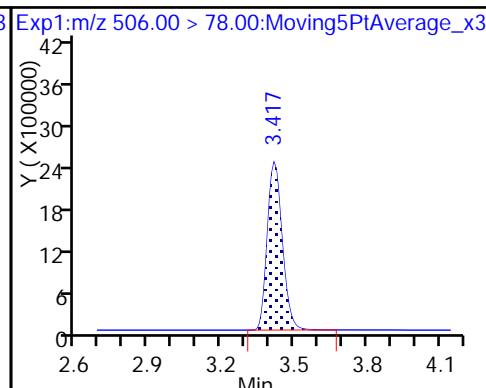
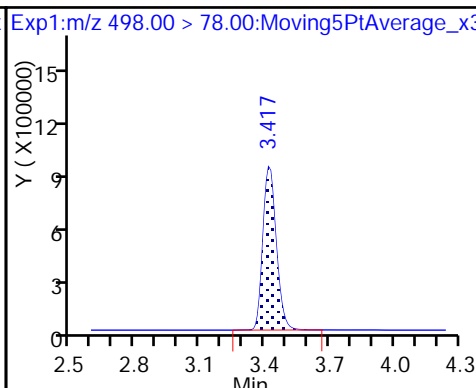
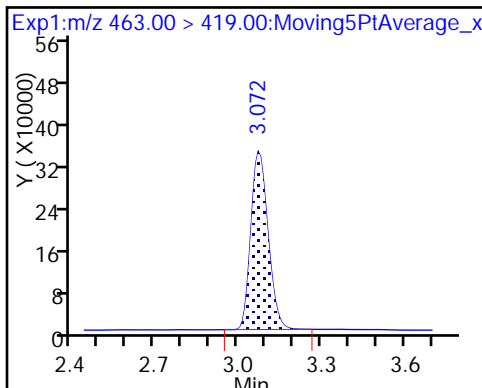
17 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid

22 Perfluorooctane Sulfonamide

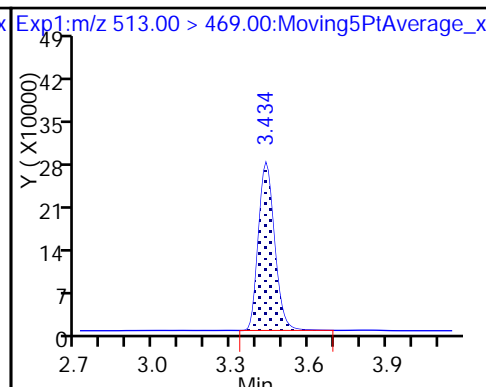
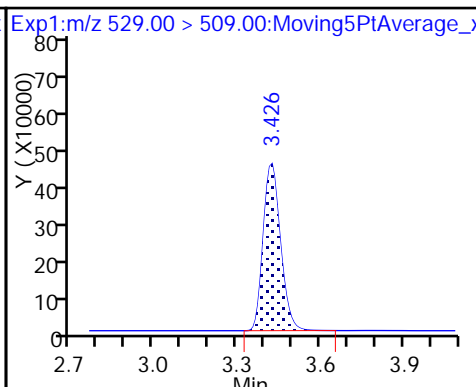
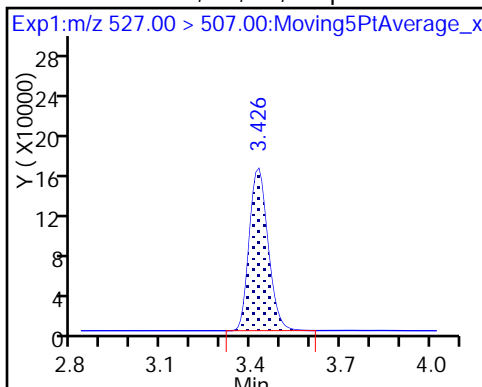
D 21 13C8 FOSA



25 Sodium 1H,1H,2H,2H-perfluorodeca

D 26 M2-8:2FTS

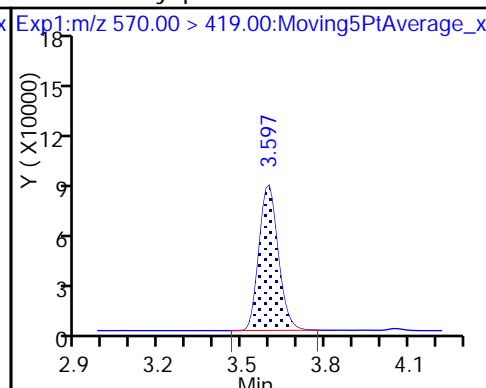
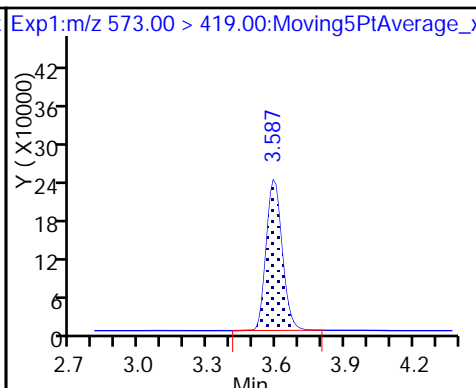
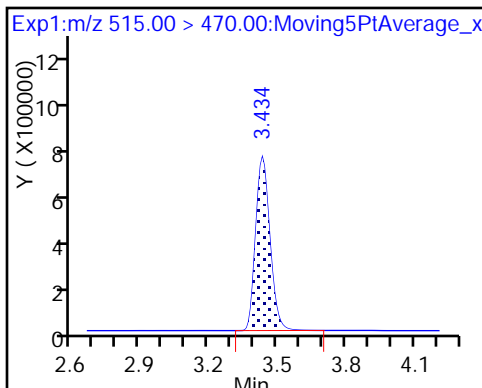
24 Perfluorodecanoic acid



D 23 13C2 PFDA

D 27 d3-NMeFOSAA

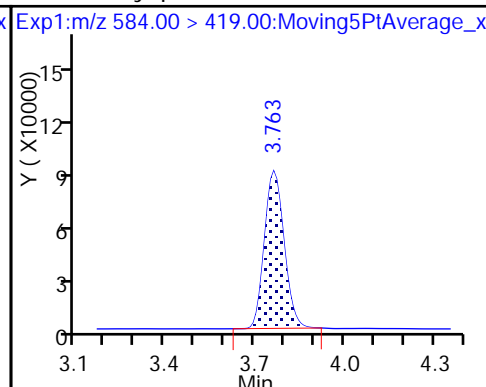
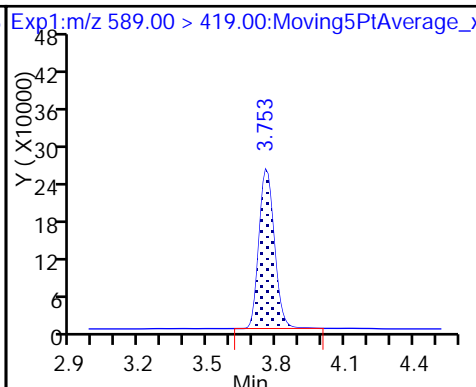
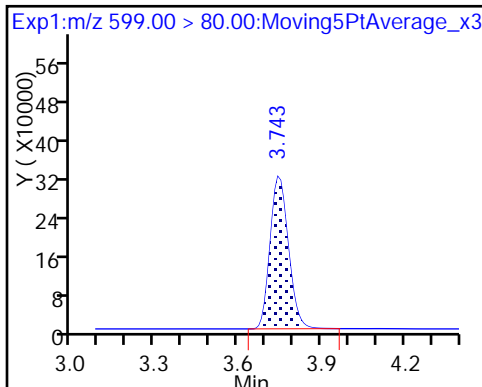
28 N-methyl perfluorooctane sulfonami

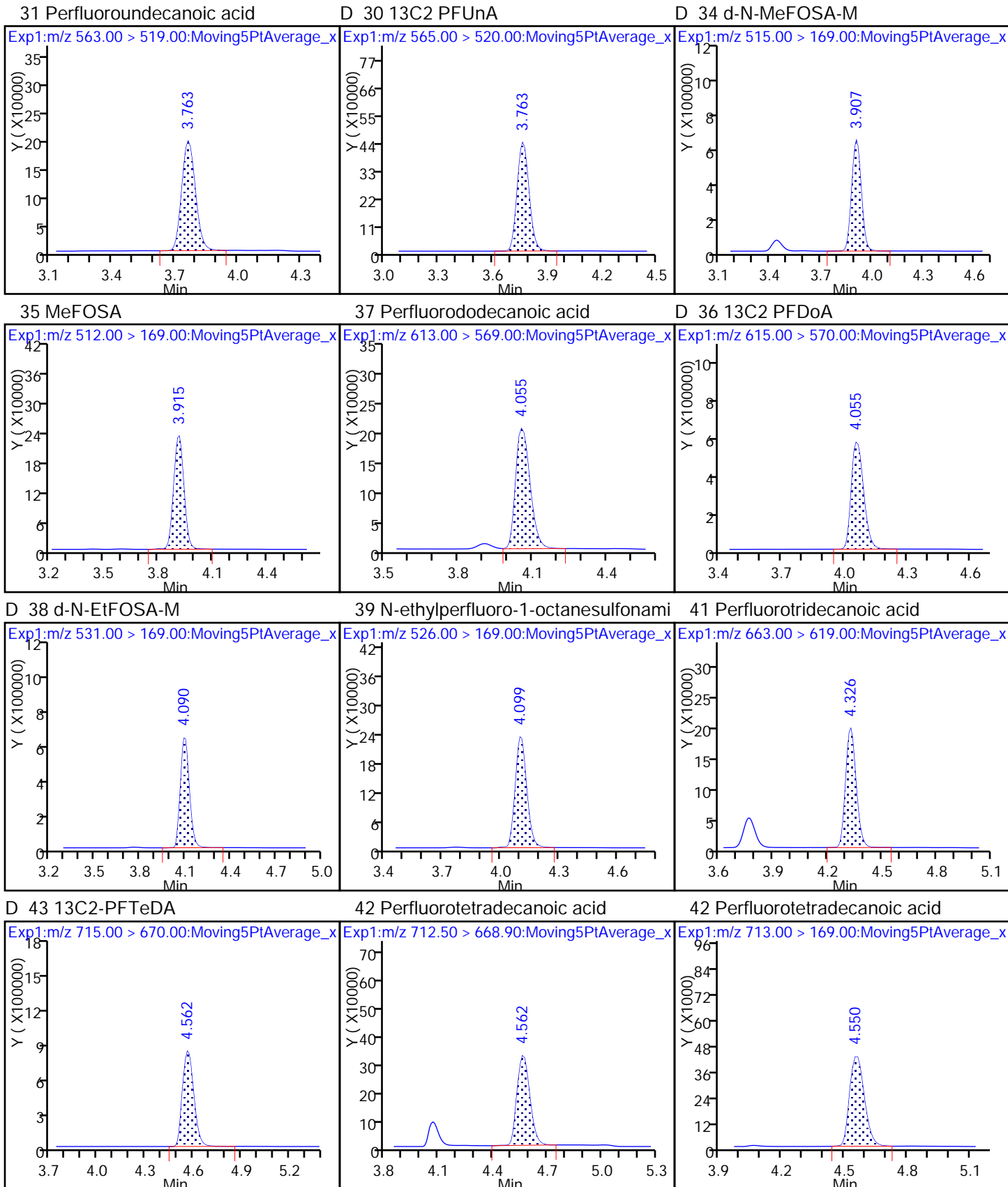


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamid

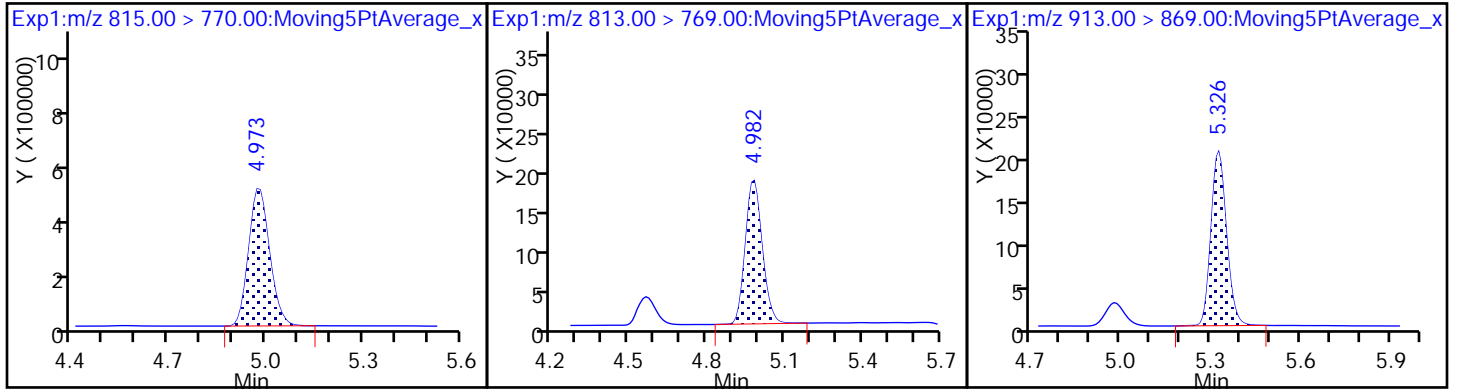




D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_007.d
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 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 20-Jul-2017 17:43:35 ALS Bottle#: 32 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 21-Jul-2017 11:40:24 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:24:37

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.547 | 1.545 | 0.002 | 9277585 | 51.5 | | 103 | 32222 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.547 | 1.549 | -0.002 | 8328503 | 49.3 | | 98.6 | 3907 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.747 | 1.752 | -0.005 | 6226392 | 52.1 | | 104 | 57639 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.747 | 1.753 | -0.006 | 6165403 | 49.6 | | 99.3 | 3635 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.775 | 1.777 | -0.002 | 149989 | NC | | | 5818 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.775 | 1.779 | -0.004 | 10077823 | 42.4 | | 95.9 | 6070 | |
| | 298.90 > 99.00 | 1.775 | 1.779 | -0.004 | 4118522 | | 2.45(0.00-0.00) | 95.9 | 5731 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.975 | 1.985 | -0.010 | 2413036 | 46.8 | | 100 | 43763 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.021 | 2.024 | -0.003 | 5521641 | 50.0 | | 100 | 41889 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.021 | 2.024 | -0.003 | 5173116 | 50.0 | | 99.9 | 11624 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.350 | 2.354 | -0.004 | 5168717 | 53.1 | | 106 | 24671 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.350 | 2.355 | -0.005 | 5052067 | 48.4 | | 96.9 | 10667 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.366 | 2.369 | -0.003 | 7913061 | 49.4 | | 104 | 55474 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.366 | 2.369 | -0.003 | 7368752 | 43.0 | | 94.6 | 5049 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.678 | 2.684 | -0.006 | 2522848 | 48.0 | 101 | 28080 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.678 | 2.684 | -0.006 | 1.000 | 2110170 | 46.3 | 97.7 | 26706 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.700 | 2.703 | -0.003 | 4413926 | 50.0 | | 36251 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.700 | 2.706 | -0.006 | 4478029 | 51.0 | 102 | 27664 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.707 | 2.710 | -0.003 | 1.000 | 4563458 | 48.7 | 97.4 | 785 |
| | 413.00 | > 169.00 | 2.700 | 2.710 | -0.010 | 0.997 | 2771428 | 1.65(0.90-1.10) | 97.4 | 8691 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.707 | 2.716 | -0.009 | 1.000 | 6830714 | 48.4 | 102 | 48468 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.071 | 3.078 | -0.007 | 5751748 | 48.7 | 102 | 31255 | |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.080 | 3.080 | 0.0 | 1.000 | 5355867 | 43.0 | 92.8 | 14891 |
| | 499.00 | > 99.00 | 3.071 | 3.080 | -0.009 | 0.997 | 1124422 | 4.76(0.90-1.10) | 92.8 | 7234 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.080 | 3.080 | 0.0 | 3519863 | 50.8 | 102 | 21365 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.080 | 3.081 | -0.001 | 1.000 | 3449039 | 49.0 | 98.0 | 6145 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.421 | 3.422 | -0.001 | 9837940 | 50.1 | 100 | 19306 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.421 | 3.422 | -0.001 | 1.000 | 9167796 | 50.5 | 101 | 21260 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.421 | 3.428 | -0.007 | 1838838 | 46.8 | 97.8 | 18763 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.421 | 3.428 | -0.007 | 1.000 | 1614685 | 45.8 | 95.6 | 20133 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.439 | 3.438 | 0.001 | 3148440 | 52.0 | 104 | 15834 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.439 | 3.438 | 0.001 | 1.000 | 2780389 | 47.2 | 94.4 | 8034 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.587 | 3.592 | -0.005 | 1150361 | 52.4 | 105 | 6915 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.598 | 3.600 | -0.002 | 1.003 | 1028023 | 49.2 | 98.4 | 5750 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.744 | 3.748 | -0.004 | 1.000 | 3520028 | 45.9 | 95.3 | 13651 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.754 | 3.757 | -0.003 | 1122693 | 48.8 | 97.7 | 3425 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.764 | 3.766 | -0.002 | 2216403 | 52.8 | 106 | 9249 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.764 | 3.766 | -0.002 | 1.000 | 2110542 | 47.2 | 94.3 | 3278 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.764 | 3.766 | -0.002 | 1.003 | 927893 | 48.6 | 97.2 | 6909 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.910 | 3.910 | 0.0 | 2561337 | 50.8 | 102 | 793 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.919 | 3.916 | 0.002 | 1.000 | 2294511 | 50.0 | 100.0 | 7471 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.062 | 4.059 | 0.003 | 2010091 | 46.1 | 92.3 | 4701 | |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.062 | 4.059 | 0.003 | 1.000 | 1994038 | 52.5 | 105 | 1935 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.097 | 4.095 | 0.002 | 2557205 | 50.2 | 100 | 5386 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.105 | 4.103 | 0.002 | 1.000 | 2334866 | 49.2 | 98.5 | 6898 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.326 | 4.328 | -0.002 | 1.000 | 1785380 | 52.2 | 104 | 763 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.567 | 4.566 | 0.001 | 3992527 | 49.1 | 98.2 | 11233 | |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.567 | 4.567 | 0.0 | 1.000 | 3902732 | 49.9 | 99.7 | 394 |
| | 713.00 | > 169.00 | 4.556 | 4.567 | -0.011 | 0.998 | 525315 | 7.43(0.00-0.00) | 99.7 | 5657 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 4.970 | 4.976 | -0.006 | 2070713 | 48.7 | 97.5 | 3929 | |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 4.979 | 4.979 | 0.0 | 1.000 | 1701571 | 49.0 | 98.0 | 288 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.317 | 5.321 | -0.004 | 1.000 | 1845337 | 52.2 | 104 | 667 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_007.d

Injection Date: 20-Jul-2017 17:43:35

Instrument ID: A8_N

Lims ID: IC L5 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

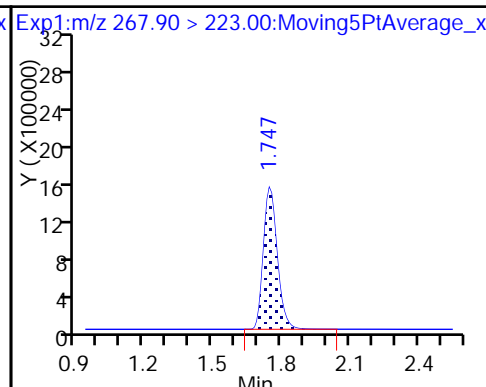
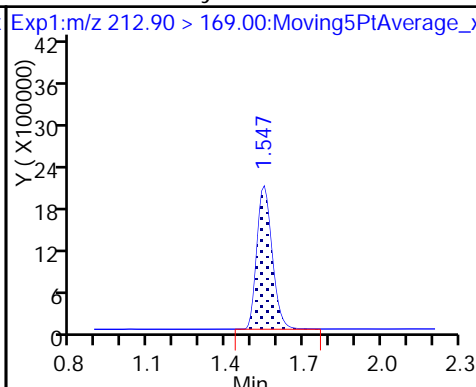
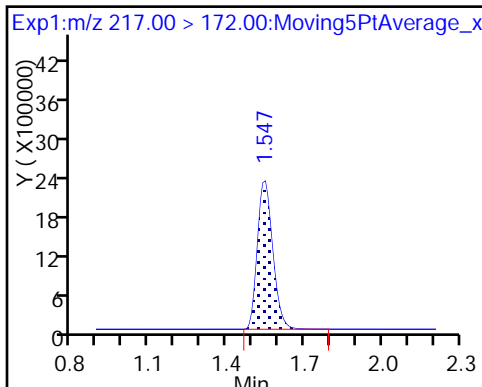
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

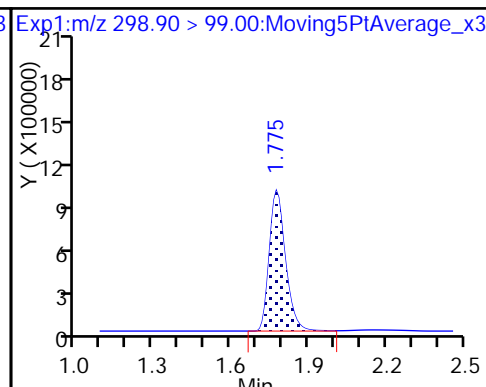
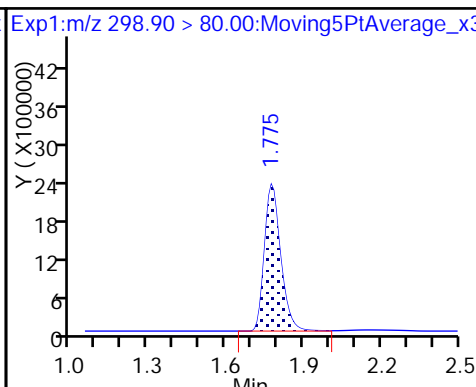
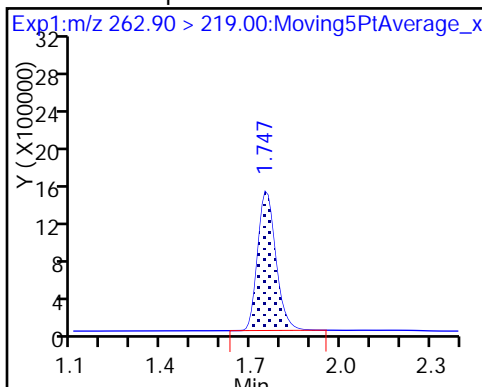
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

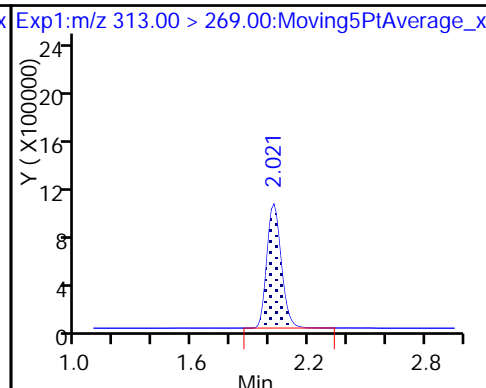
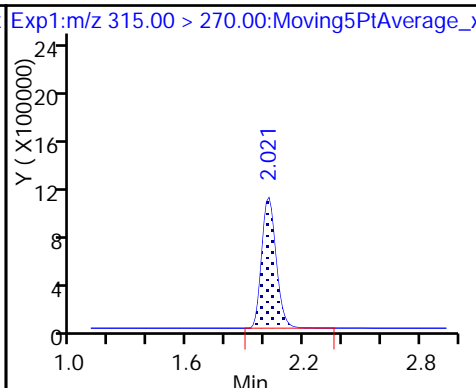
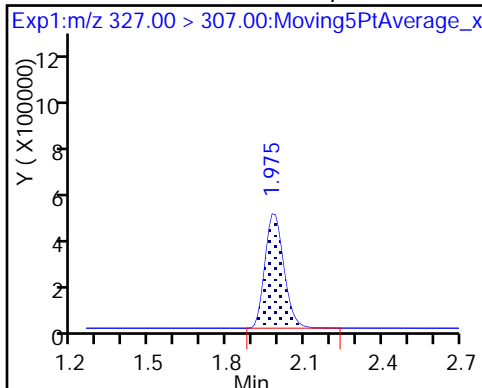
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoate

De 7 13C2 PFHxA

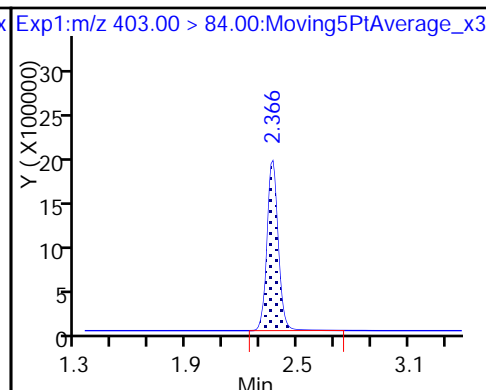
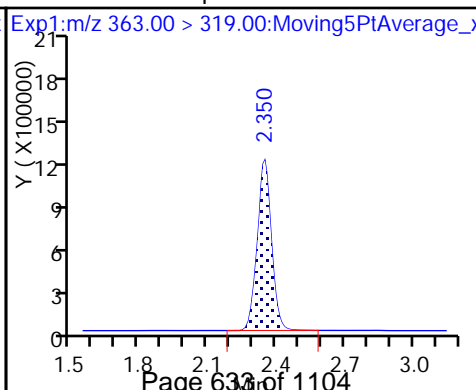
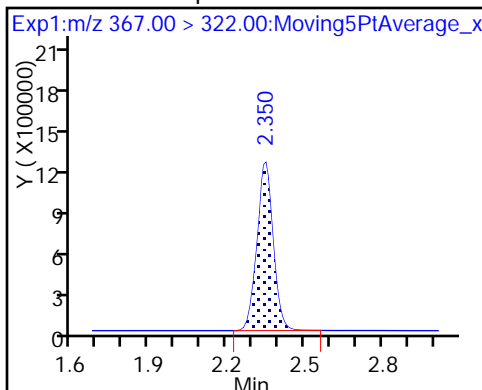
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

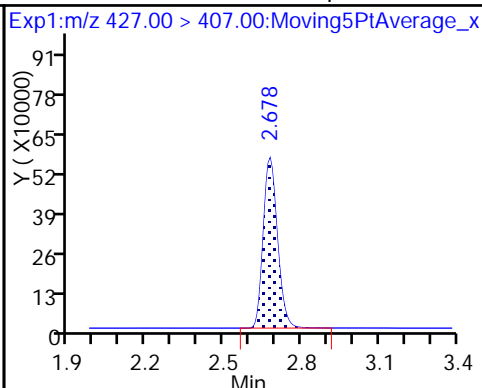
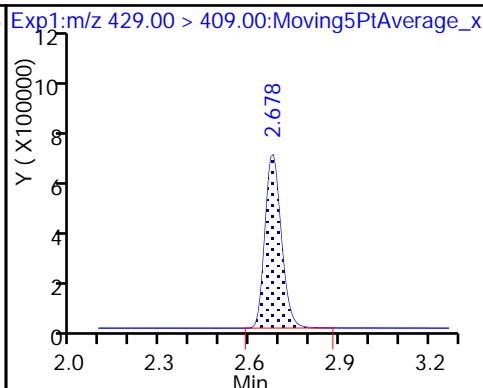
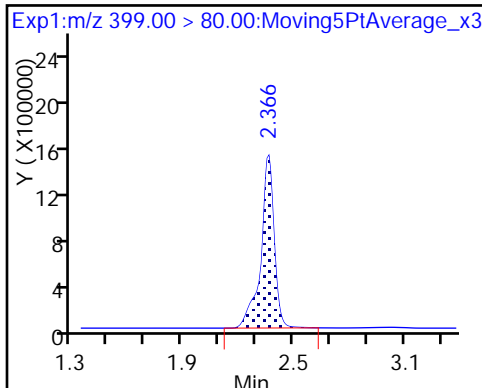
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

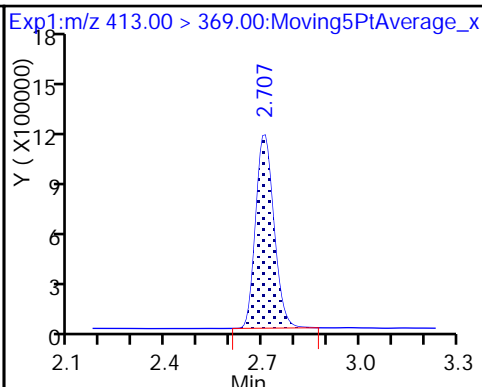
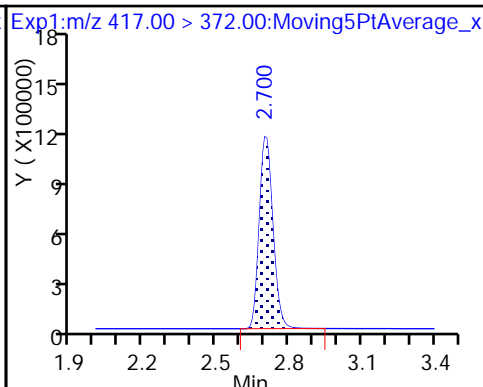
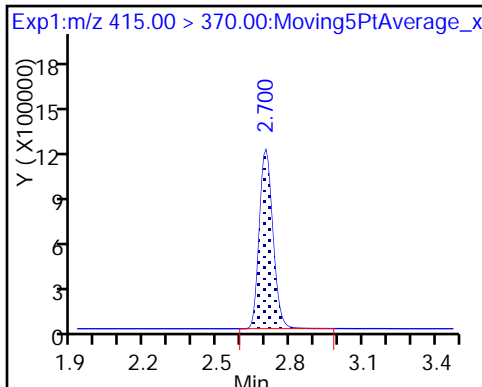
13 Sodium 1H,1H,2H,2H-perfluorooctane



* 62 13C2-PFOA

D 14 13C4 PFOA

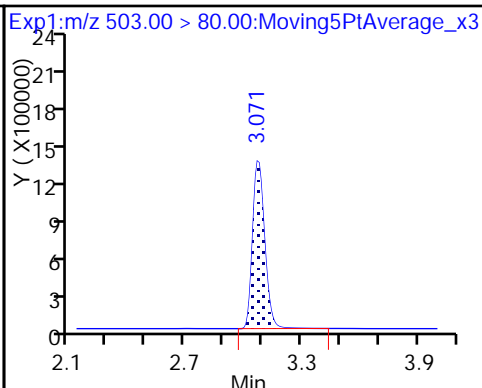
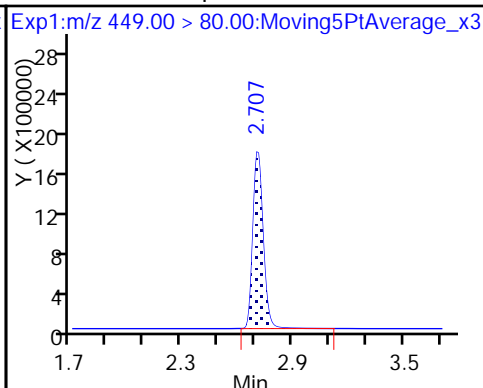
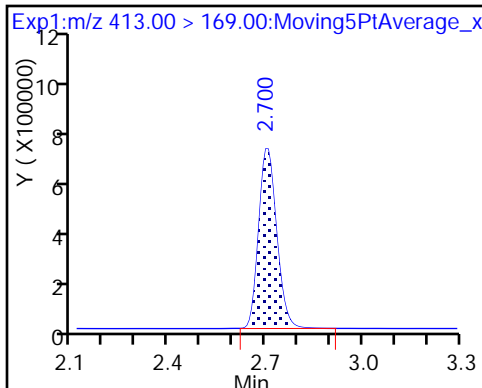
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

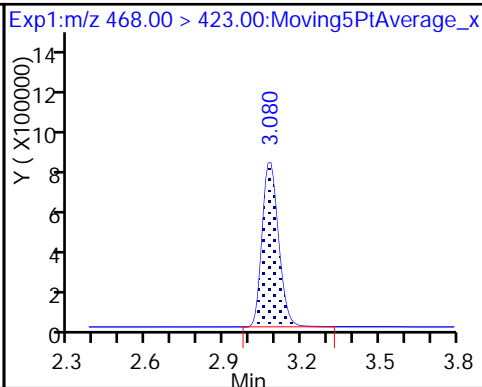
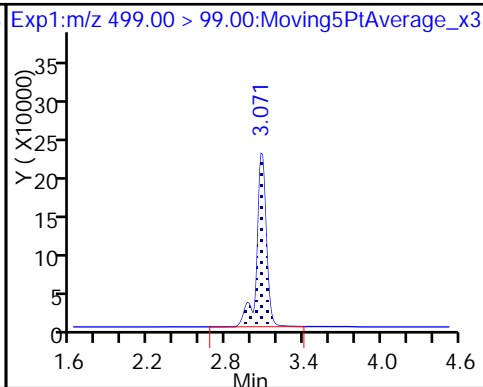
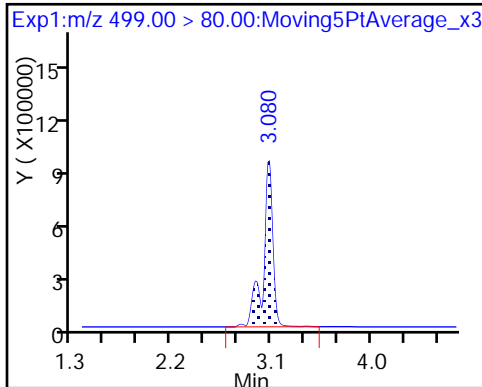
D 18 13C4 PFOS



17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

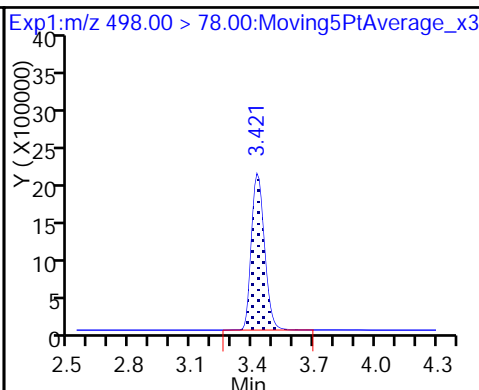
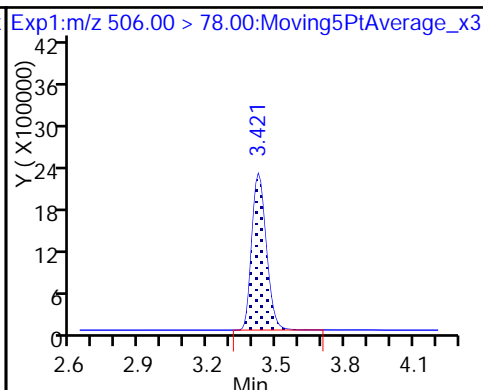
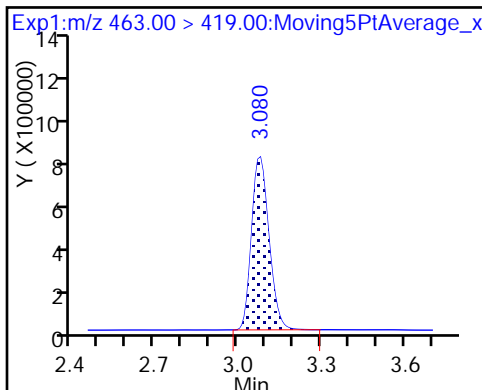
D 19 13C5 PFNA



20 Perfluorononanoic acid

D 21 13C8 FOSA

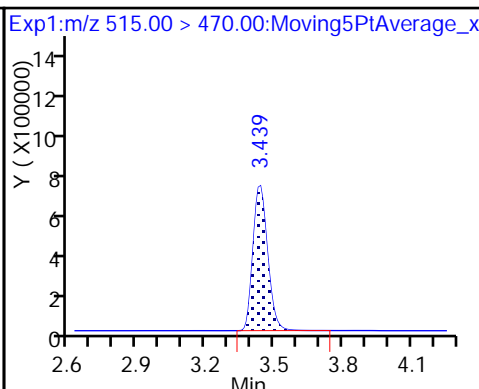
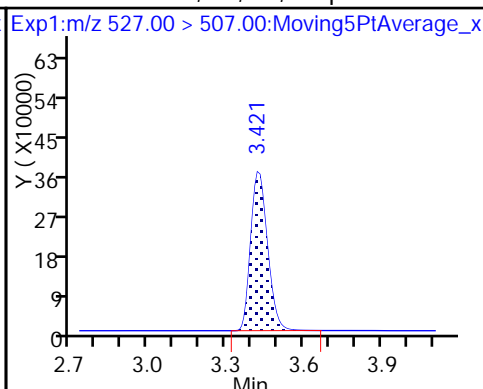
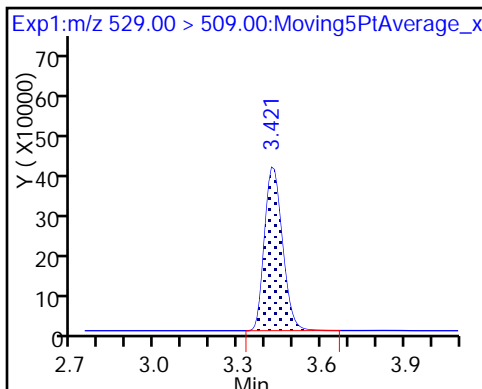
22 Perfluorooctane Sulfonamide



D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

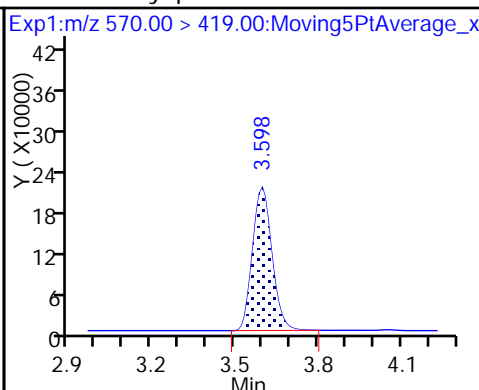
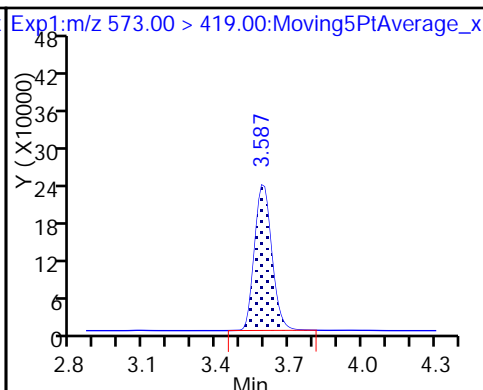
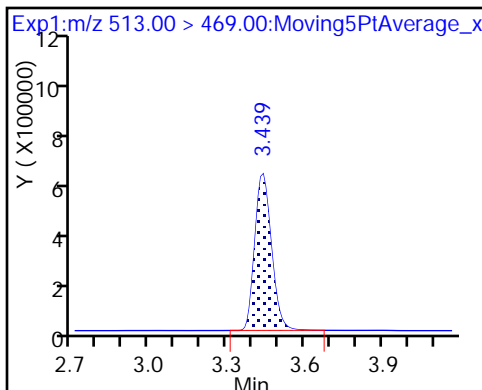
De23 13C2 PFDA



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

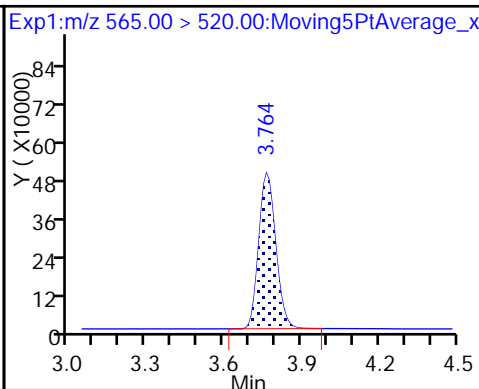
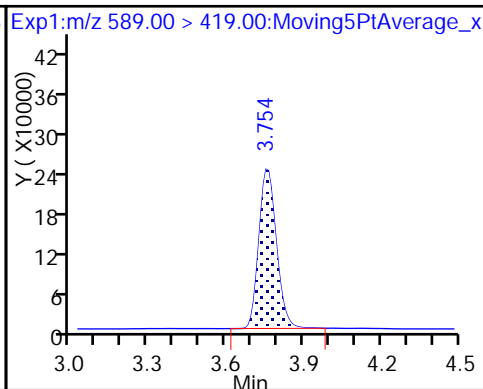
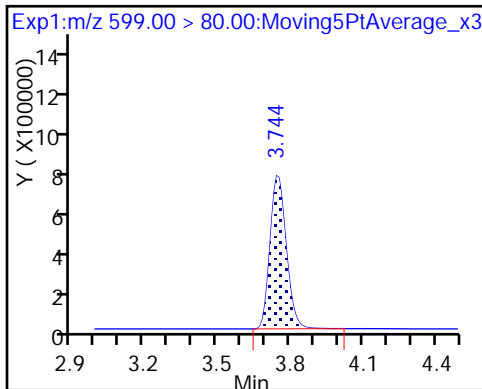
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

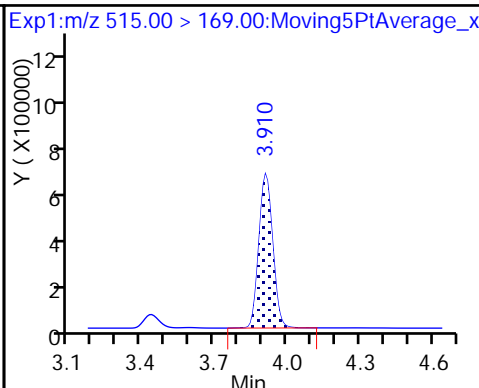
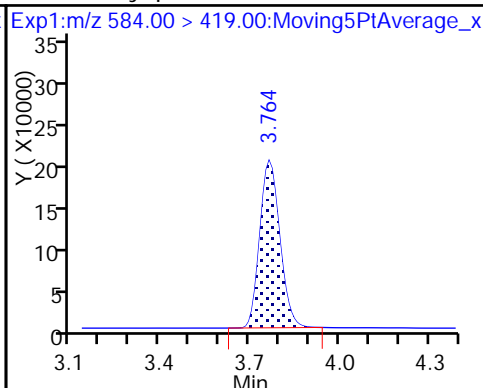
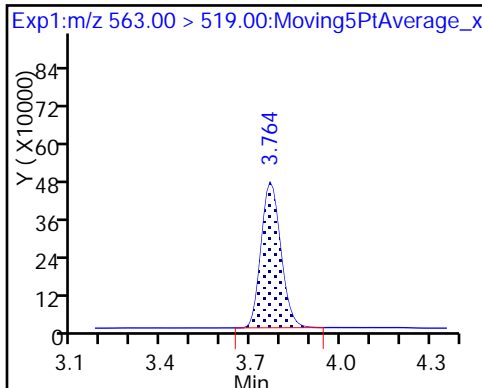
D 30 13C2 PFUnA



31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid D

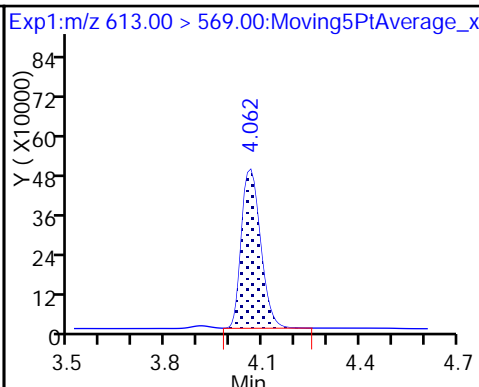
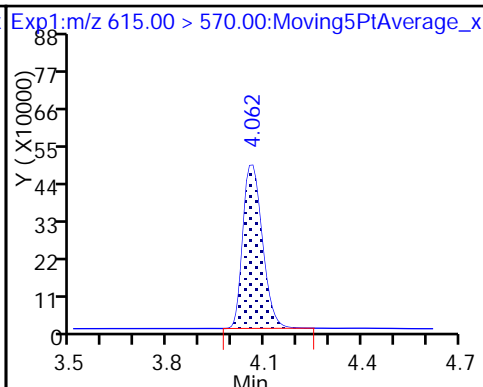
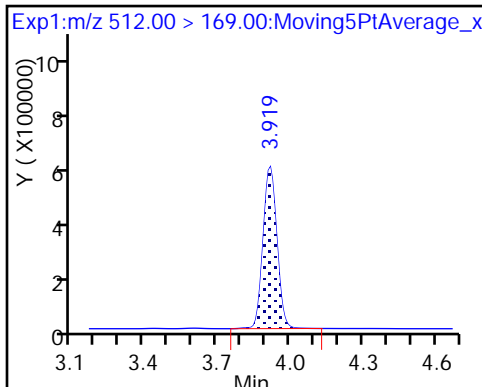
34 d-N-MeFOSA-M



35 MeFOSA

D 36 13C2 PFDaA

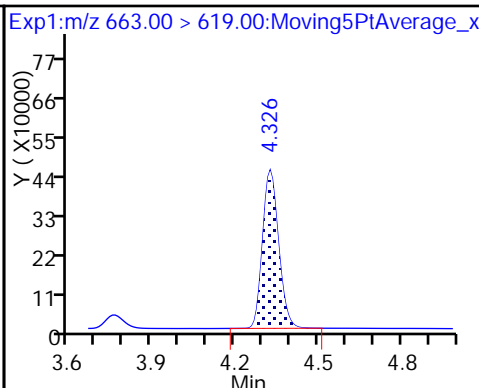
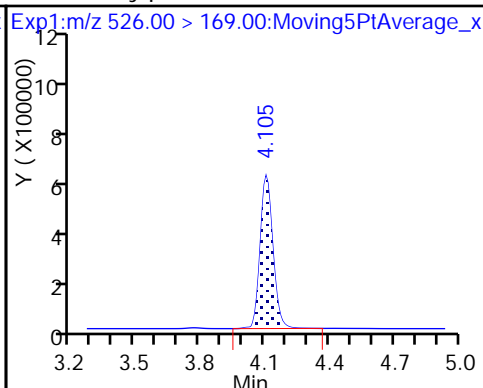
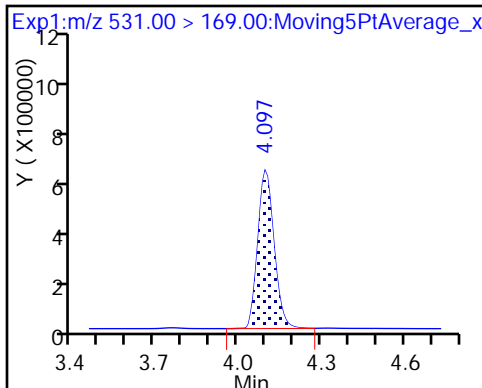
37 Perfluorododecanoic acid



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

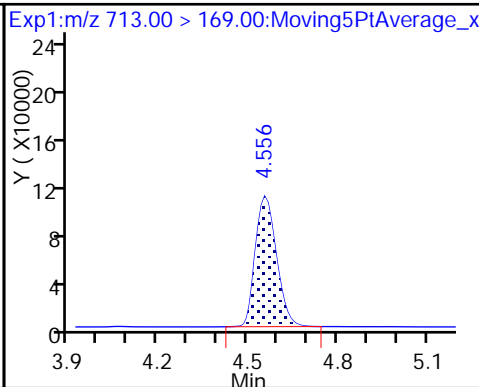
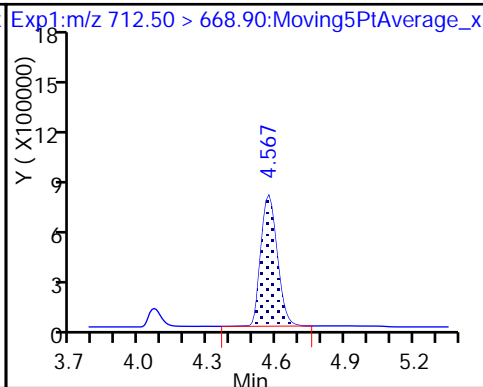
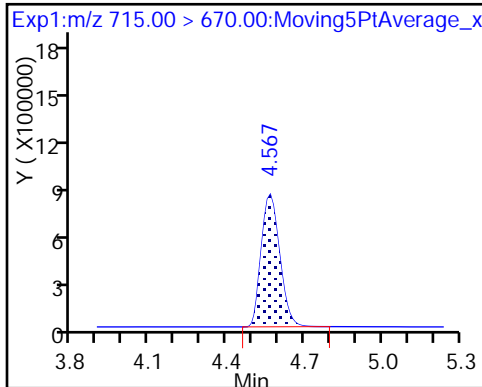
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

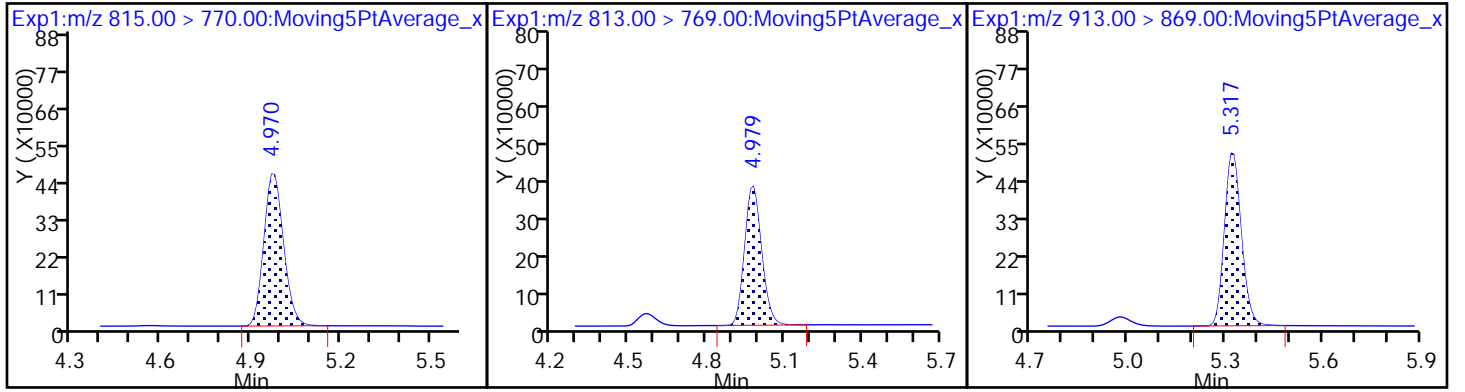
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_008.d
 Lims ID: IC L6 Full
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 20-Jul-2017 17:50:29 ALS Bottle#: 33 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 21-Jul-2017 11:40:27 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:25:04

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.545 | 1.545 | 0.0 | 8377231 | 46.5 | | 93.1 | 28996 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.545 | 1.549 | -0.004 | 14335268 | 94.0 | | 94.0 | 6369 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.745 | 1.752 | -0.007 | 5499850 | 46.0 | | 92.0 | 49000 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.745 | 1.753 | -0.008 | 10716890 | 97.7 | | 97.7 | 6650 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.772 | 1.777 | -0.005 | 145902 | NC | | | 5698 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.772 | 1.779 | -0.007 | 17769760 | 79.7 | | 90.2 | 8750 | |
| | 298.90 > 99.00 | 1.772 | 1.779 | -0.007 | 7732377 | | 2.30(0.00-0.00) | 90.2 | 9438 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.982 | 1.985 | -0.003 | 4301810 | 86.2 | | 92.3 | 170798 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.017 | 2.024 | -0.007 | 9254644 | 96.1 | | 96.1 | 18222 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.017 | 2.024 | -0.007 | 5137101 | 46.5 | | 93.1 | 32940 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.347 | 2.354 | -0.007 | 4705801 | 48.4 | | 96.7 | 28343 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.347 | 2.355 | -0.008 | 9354552 | 98.5 | | 98.5 | 14157 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.363 | 2.369 | -0.006 | 14281648 | 89.1 | | 97.9 | 7507 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.363 | 2.369 | -0.006 | 7413535 | 46.2 | | 97.7 | 43292 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-------|-----------------|-----------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.677 | 2.684 | -0.007 | 1.000 | 3932933 | 89.1 | 94.0 | 26026 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.677 | 2.684 | -0.007 | | 2442868 | 46.5 | 97.8 | 32909 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.699 | 2.703 | -0.004 | | 3856895 | 50.0 | | 29604 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.699 | 2.706 | -0.007 | | 3807339 | 43.4 | 86.7 | 30738 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.699 | 2.710 | -0.011 | 1.000 | 8175273 | 102.6 | 103 | 1409 |
| | 413.00 | > 169.00 | 2.699 | 2.710 | -0.011 | 1.000 | 4970194 | | 1.64(0.90-1.10) | 103 13400 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.713 | 2.716 | -0.003 | 1.000 | 12636679 | 95.5 | 100 | 131820 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.071 | 3.078 | -0.007 | | 5391084 | 45.7 | 95.5 | 17226 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.071 | 3.080 | -0.009 | | 3251409 | 46.9 | 93.9 | 16147 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.071 | 3.080 | -0.009 | 1.000 | 11092240 | 95.1 | 102 | 273291 |
| | 499.00 | > 99.00 | 3.071 | 3.080 | -0.009 | 1.000 | 2283682 | | 4.86(0.90-1.10) | 102 9306 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.071 | 3.081 | -0.010 | 1.000 | 6341679 | 97.5 | 97.5 | 14108 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.414 | 3.422 | -0.008 | 1.000 | 16079802 | 94.8 | 94.8 | 18524 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.414 | 3.422 | -0.008 | | 9178999 | 46.8 | 93.5 | 15675 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.423 | 3.428 | -0.005 | 1.000 | 2915139 | 87.5 | 91.3 | 22218 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.423 | 3.428 | -0.005 | | 1738290 | 44.3 | 92.5 | 21438 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.432 | 3.438 | -0.006 | 1.000 | 4980519 | 98.1 | 98.1 | 10734 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.432 | 3.438 | -0.006 | | 2711585 | 44.8 | 89.6 | 9376 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.590 | 3.592 | -0.002 | | 1029158 | 46.9 | 93.8 | 5673 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.590 | 3.600 | -0.010 | 1.000 | 1961461 | 105.0 | 105 | 7110 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.737 | 3.748 | -0.011 | 1.000 | 6731234 | 93.7 | 97.2 | 13035 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.747 | 3.757 | -0.010 | | 1060235 | 46.1 | 92.2 | 2921 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.756 | 3.766 | -0.010 | 1.003 | 1817407 | 100.8 | 101 | 9129 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.756 | 3.766 | -0.010 | 1.000 | 3747668 | 97.1 | 97.1 | 4561 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.756 | 3.766 | -0.010 | | 1916521 | 45.6 | 91.3 | 8046 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.905 | 3.910 | -0.005 | 2494419 | 49.5 | 98.9 | 778 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.913 | 3.916 | -0.003 | 1.000 | 4515811 | 101 | 6574 | |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.047 | 4.059 | -0.012 | 1.000 | 3884028 | 97.9 | 3506 | |
| D 36 13C2 PFDa | 615.00 | > 570.00 | 4.047 | 4.059 | -0.012 | 2101530 | 48.2 | 96.5 | 5456 | |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.092 | 4.095 | -0.003 | 2558136 | 50.2 | 100 | 4635 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.100 | 4.103 | -0.003 | 1.000 | 4779335 | 100.7 | 6458 | |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.314 | 4.328 | -0.014 | 1.000 | 3395607 | 94.9 | 1285 | |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.550 | 4.566 | -0.016 | 3865134 | 47.5 | 95.1 | 13369 | |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.550 | 4.567 | -0.017 | 1.000 | 6873007 | 84.0 | 969 | |
| | 713.00 | > 169.00 | 4.550 | 4.567 | -0.017 | 1.000 | 923146 | 7.45(0.00-0.00) | 84.0 | 6931 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 4.966 | 4.976 | -0.010 | 2069286 | 48.7 | 97.4 | 3568 | |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 4.966 | 4.979 | -0.013 | 1.000 | 3525628 | 97.9 | 524 | |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.306 | 5.321 | -0.015 | 1.000 | 3702487 | 100 | 1235 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L6_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_008.d

Injection Date: 20-Jul-2017 17:50:29

Instrument ID: A8_N

Lims ID: IC L6 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 33

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

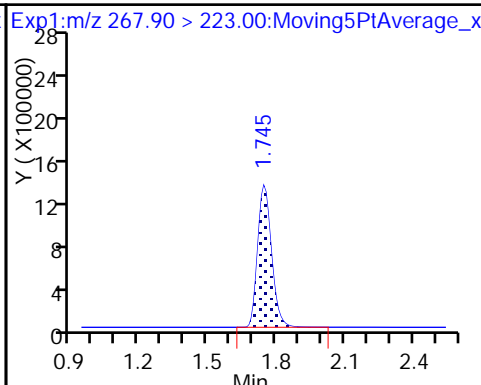
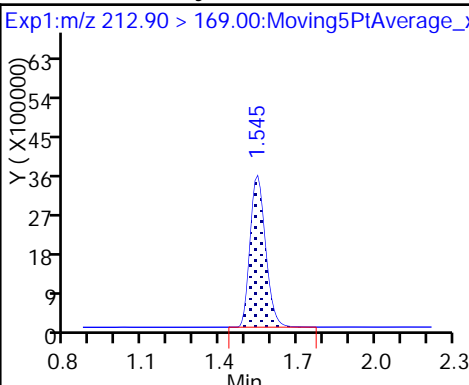
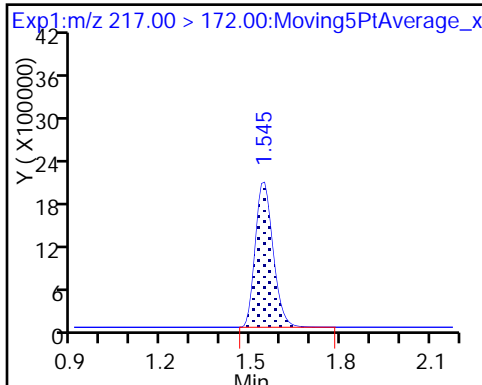
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

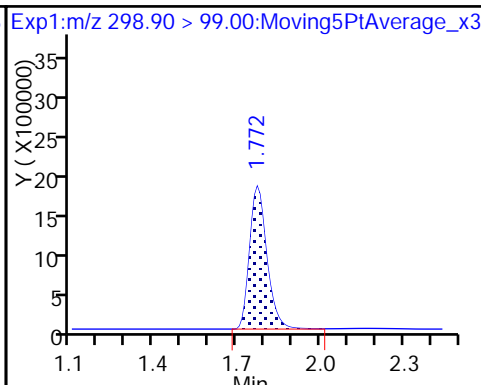
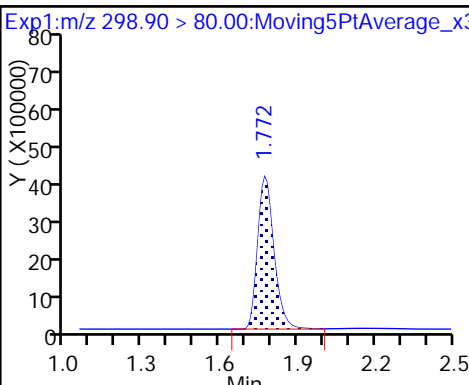
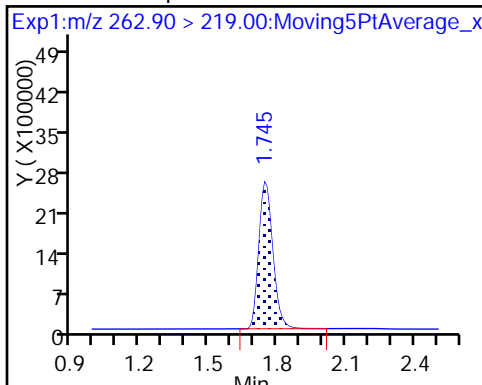
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

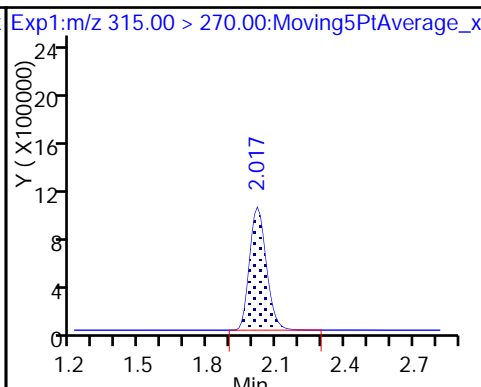
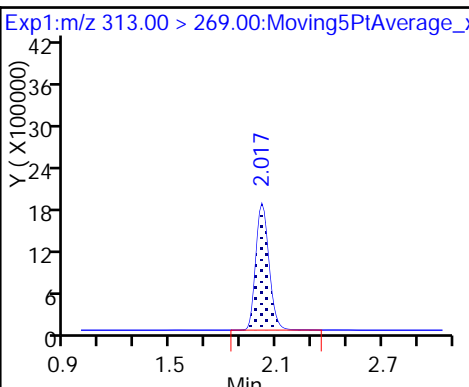
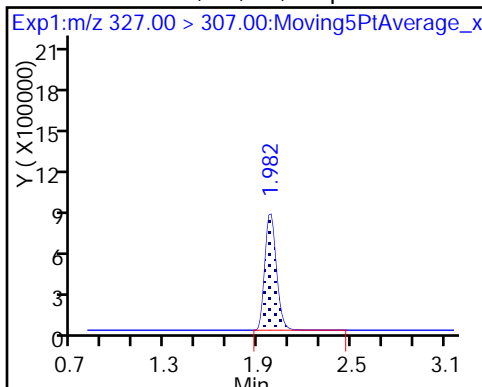
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

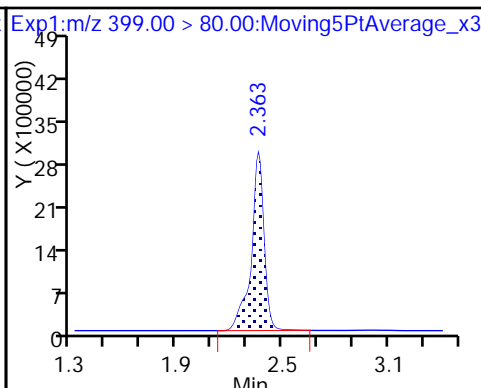
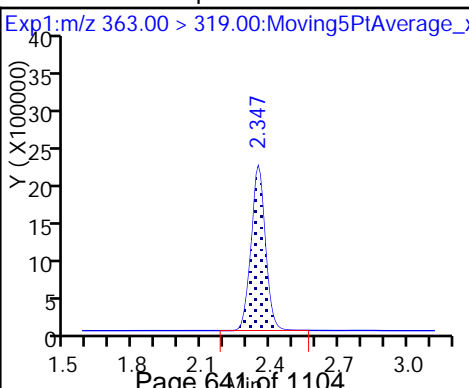
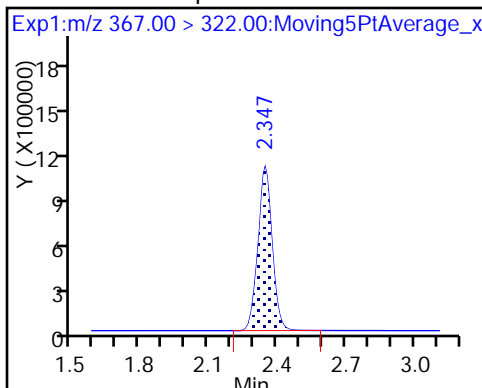
D 7 13C2 PFHxA



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

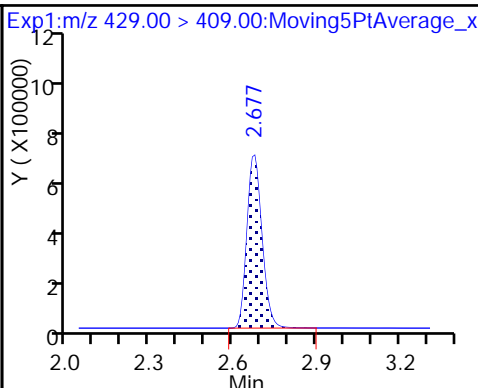
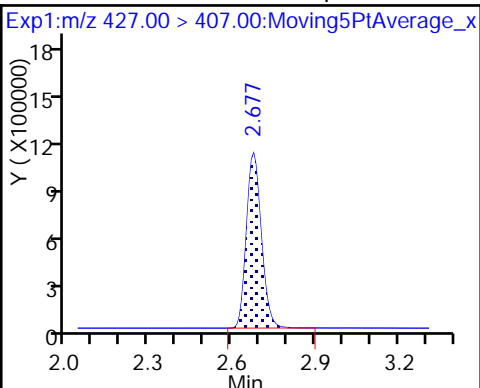
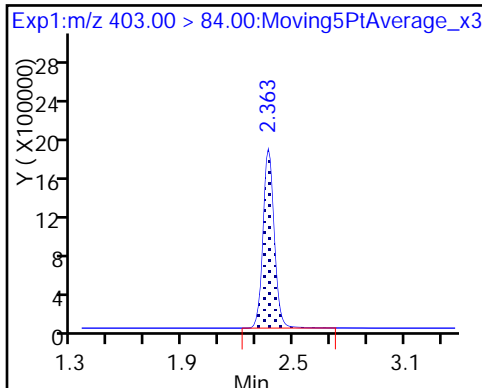
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

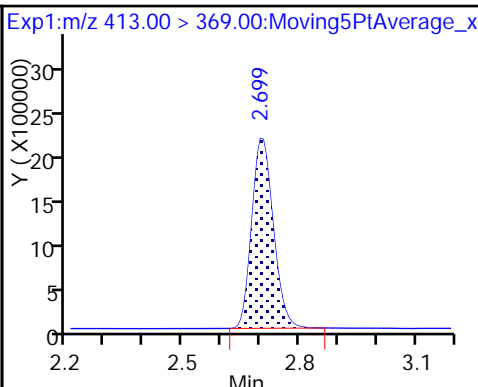
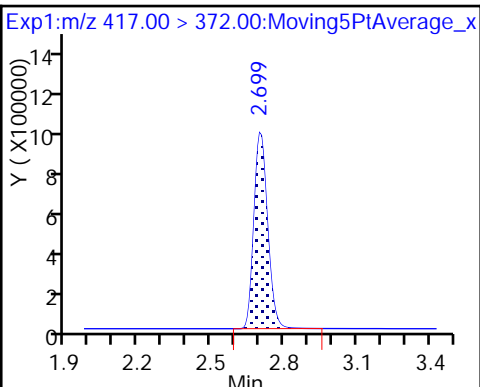
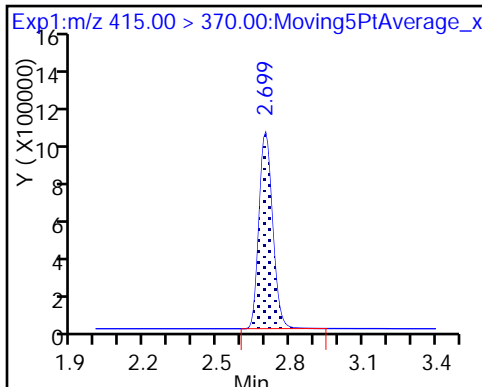
D 12 M2-6:2FTS



* 62 13C2-PFOA

D 14 13C4 PFOA

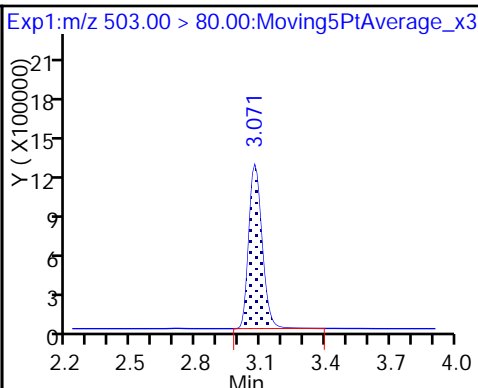
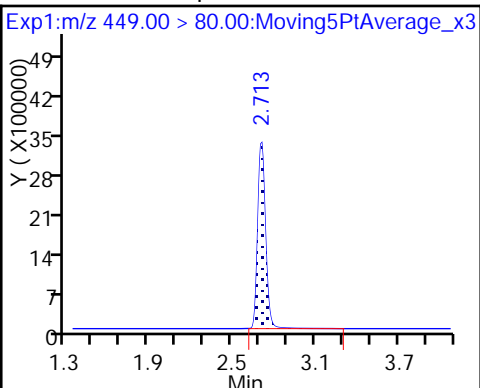
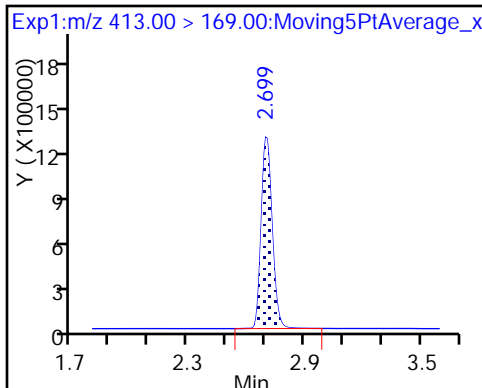
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

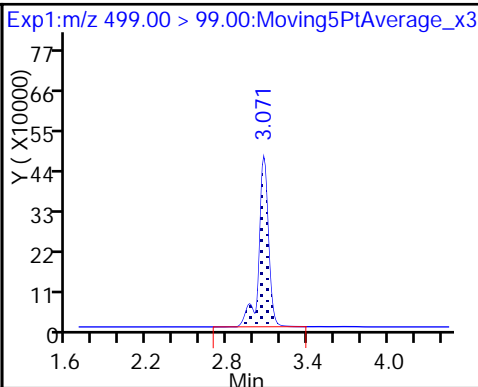
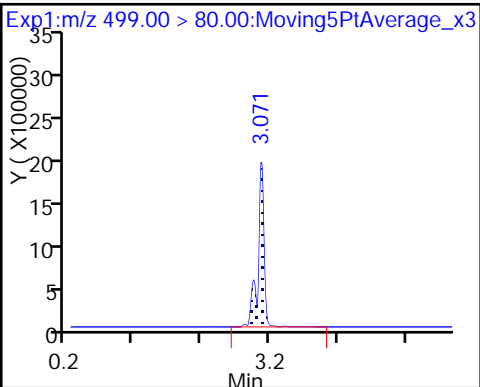
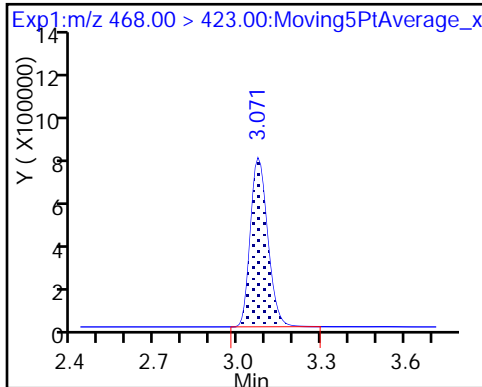
D 18 13C4 PFOS



D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid

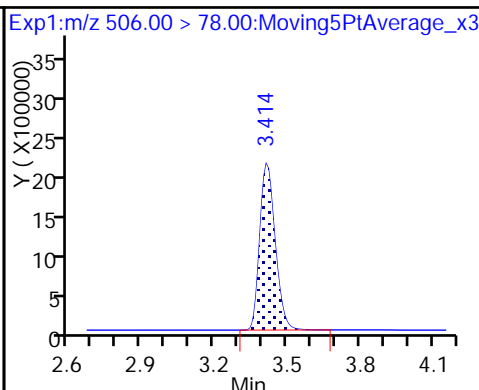
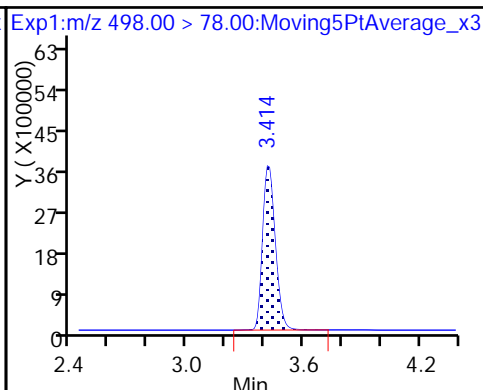
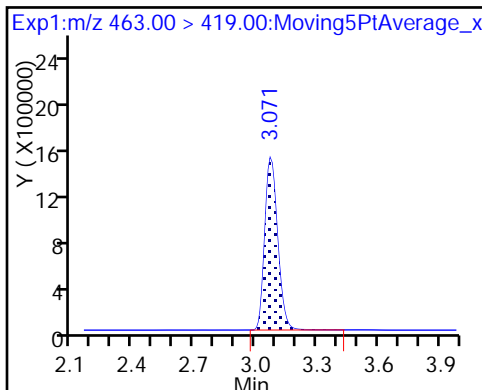
17 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid

22 Perfluorooctane Sulfonamide

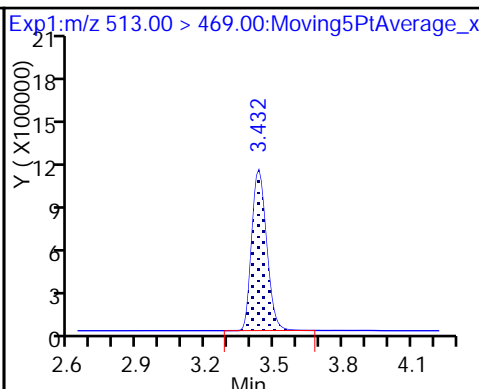
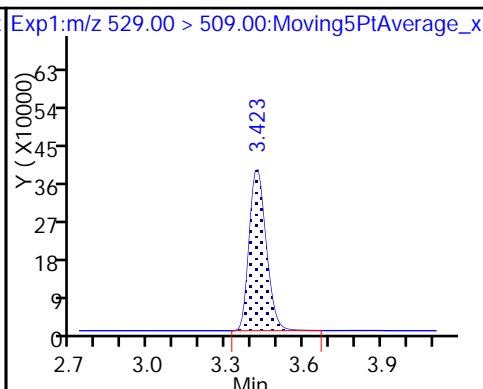
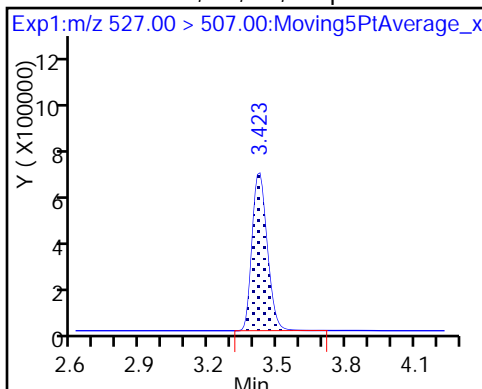
D 21 13C8 FOSA



25 Sodium 1H,1H,2H,2H-perfluorodecanoate

D 26 M2-8:2FTS

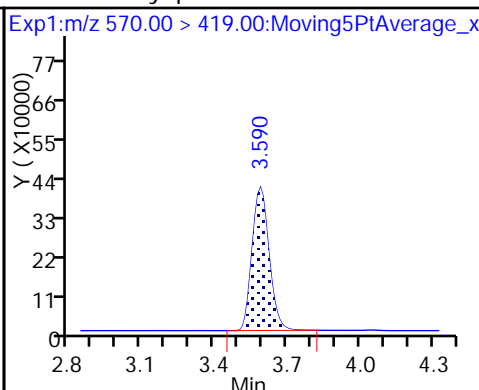
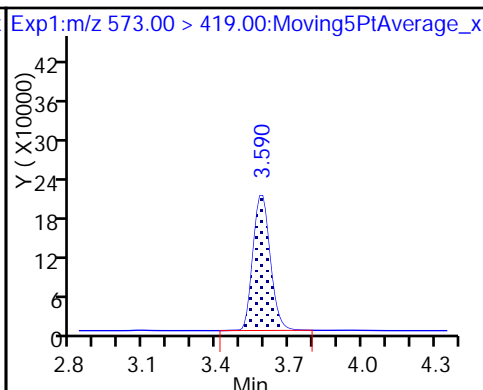
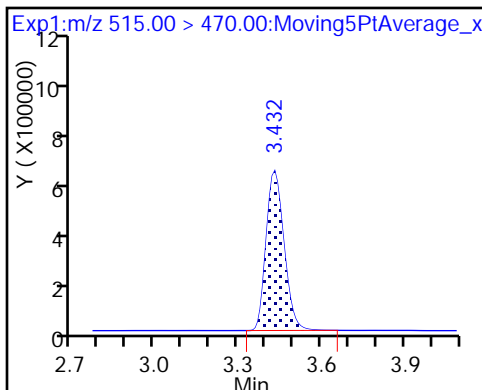
24 Perfluorodecanoic acid



D 23 13C2 PFDA

D 27 d3-NMeFOSAA

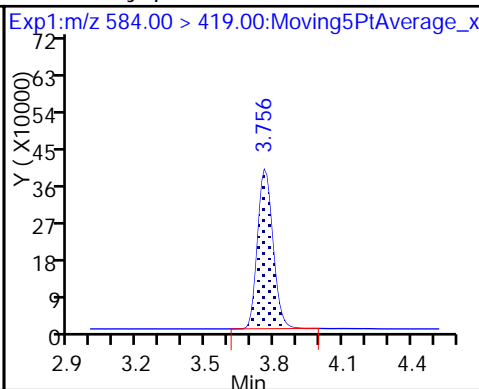
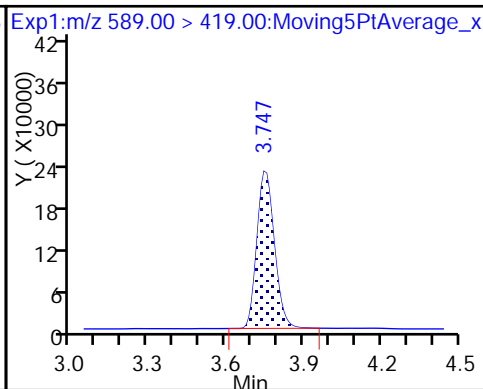
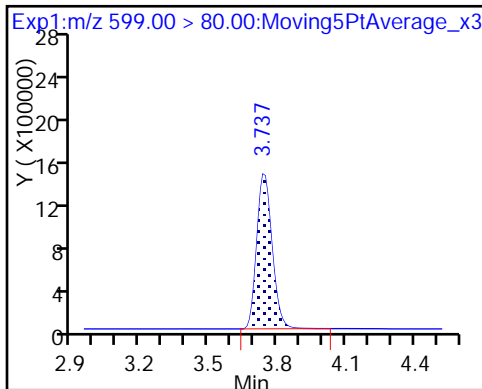
28 N-methyl perfluorooctane sulfonamide

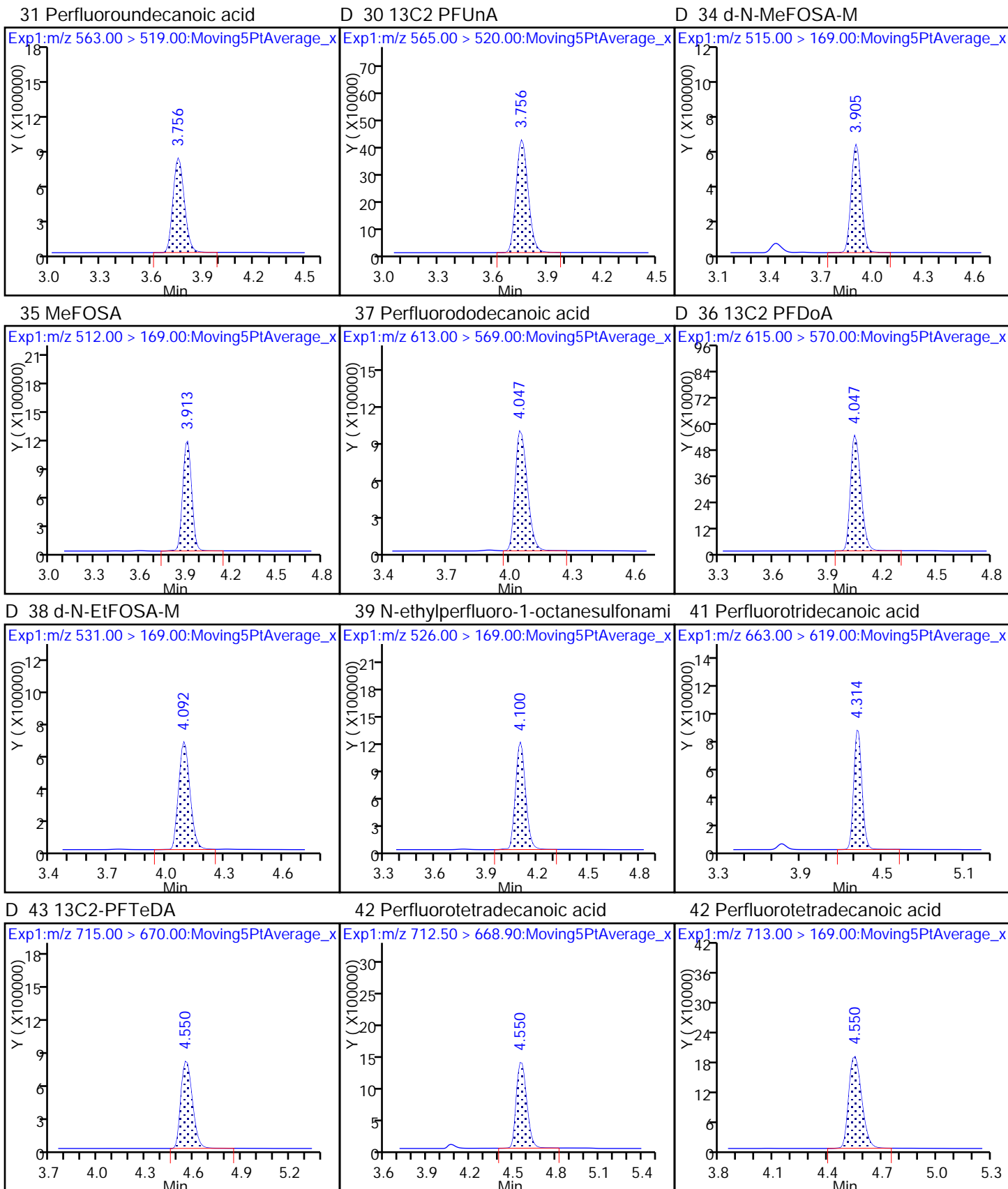


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamide

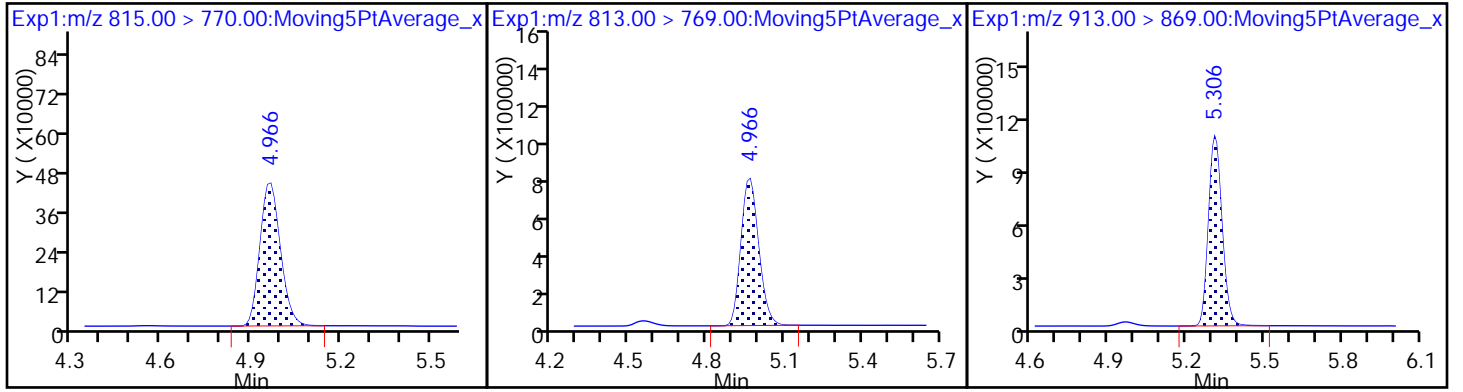




D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_009.d
 Lims ID: IC L7 Full
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 20-Jul-2017 17:57:22 ALS Bottle#: 34 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L7-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 21-Jul-2017 11:40:30 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:47:49

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.542 | 1.545 | -0.003 | 7833395 | 43.5 | | 87.0 | 27098 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.551 | 1.549 | 0.002 | 1.000 | 23214875 | 162.7 | 81.4 | 8821 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.751 | 1.752 | -0.001 | 5042456 | 42.2 | | 84.3 | 39019 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.751 | 1.753 | -0.002 | 1.000 | 17723967 | 176.2 | 88.1 | 9621 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.778 | 1.777 | 0.001 | 139538 | NC | | | 5396 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.778 | 1.779 | -0.001 | 1.000 | 28727203 | 136.1 | 77.0 | 10880 | |
| | 298.90 > 99.00 | 1.778 | 1.779 | -0.001 | 1.000 | 14221686 | 2.02(0.00-0.00) | 77.0 | 14321 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.990 | 1.985 | 0.005 | 1.000 | 8272054 | 161.2 | 86.3 | 63417 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.024 | 2.024 | 0.0 | 4842529 | 43.9 | | 87.7 | 36870 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.024 | 2.024 | 0.0 | 1.000 | 17019818 | 187.5 | 93.7 | 22503 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.356 | 2.354 | 0.002 | 4136580 | 42.5 | | 85.0 | 22764 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.356 | 2.355 | 0.001 | 1.000 | 15737233 | 188.5 | 94.2 | 18500 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.373 | 2.369 | 0.004 | 7022783 | 43.8 | | 92.6 | 35629 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.373 | 2.369 | 0.004 | 1.000 | 26096061 | 171.8 | 94.4 | 11704 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|--------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.681 | 2.684 | -0.003 | 2513479 | 47.8 | 101 | 24577 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.681 | 2.684 | -0.003 | 1.000 | 7544242 | 166.1 | 87.6 | 345416 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.703 | 2.703 | 0.0 | 3429253 | 50.0 | | 24053 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.703 | 2.706 | -0.003 | 3595203 | 40.9 | 81.9 | 30744 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.710 | 2.710 | 0.0 | 1.000 | 14387974 | 191.2 | 95.6 | 2766 |
| | 413.00 | > 169.00 | 2.710 | 2.710 | 0.0 | 1.000 | 8974052 | 1.60(0.90-1.10) | 95.6 | 13689 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.717 | 2.716 | 0.001 | 1.000 | 21882659 | 165.1 | 86.7 | 50414 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.076 | 3.078 | -0.002 | 5397776 | 45.7 | 95.7 | 13834 | |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.076 | 3.080 | -0.004 | 1.000 | 21396229 | 183.2 | 98.7 | 48869 |
| | 499.00 | > 99.00 | 3.076 | 3.080 | -0.004 | 1.000 | 4772717 | 4.48(0.90-1.10) | 98.7 | 13349 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.076 | 3.080 | -0.004 | 2923565 | 42.2 | 84.4 | 17157 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.076 | 3.081 | -0.005 | 1.000 | 11221107 | 191.9 | 96.0 | 17485 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.422 | 3.422 | 0.0 | 8597334 | 43.8 | 87.6 | 15996 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.422 | 3.422 | 0.0 | 1.000 | 27533112 | 173.4 | 86.7 | 12796 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.422 | 3.428 | -0.006 | 1691570 | 43.1 | 90.0 | 16950 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.422 | 3.428 | -0.006 | 1.000 | 5746246 | 177.2 | 92.5 | 15851 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.431 | 3.438 | -0.007 | 2465695 | 40.7 | 81.5 | 10526 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.431 | 3.438 | -0.007 | 1.000 | 9286312 | 201.2 | 101 | 12794 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.590 | 3.592 | -0.002 | 1050235 | 47.8 | 95.7 | 4723 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.590 | 3.600 | -0.010 | 1.000 | 3976390 | 208.5 | 104 | 7399 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.747 | 3.748 | -0.001 | 1.000 | 12733574 | 177.1 | 91.8 | 9865 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.757 | 3.757 | 0.0 | 1067375 | 46.4 | 92.9 | 2798 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.757 | 3.766 | -0.009 | 1734594 | 41.3 | 82.6 | 6217 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.757 | 3.766 | -0.009 | 1.000 | 7090167 | 203.1 | 102 | 5186 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.757 | 3.766 | -0.009 | 1.000 | 3601071 | 198.5 | 99.2 | 9930 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|-----------------|------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.907 | 3.910 | -0.003 | | 2566577 | | 102 | 890 | |
| 35 MeFOSA | 512.00 > 169.00 | 3.916 | 3.916 | 0.0 | 1.000 | 9190215 | | 99.9 | 7452 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.052 | 4.059 | -0.007 | | 1999100 | | 91.8 | 4409 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.052 | 4.059 | -0.007 | 1.000 | 7176939 | | 95.1 | 5338 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.097 | 4.095 | 0.002 | | 2546633 | | 100 | 3778 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.106 | 4.103 | 0.003 | 1.000 | 9376063 | | 99.3 | 8597 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.323 | 4.328 | -0.005 | 1.000 | 6481083 | | 95.2 | 2783 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.551 | 4.566 | -0.015 | | 3577415 | | 88.0 | 10076 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.563 | 4.567 | -0.004 | 1.000 | 13208906 | | 84.9 | 2089 | |
| | 713.00 > 169.00 | 4.551 | 4.567 | -0.016 | 0.997 | 1836536 | 7.19(0.00-0.00) | 84.9 | 9777 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 4.968 | 4.976 | -0.008 | | 1868909 | | 88.0 | 3303 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 4.968 | 4.979 | -0.011 | 1.000 | 6914779 | | 101 | 943 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.309 | 5.321 | -0.012 | 1.000 | 6917166 | | 98.4 | 1711 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L7_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_009.d

Injection Date: 20-Jul-2017 17:57:22

Instrument ID: A8_N

Lims ID: IC L7 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 34

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

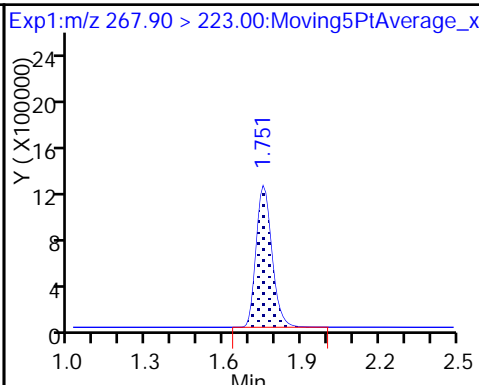
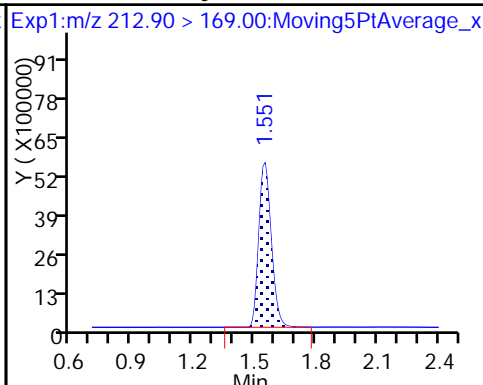
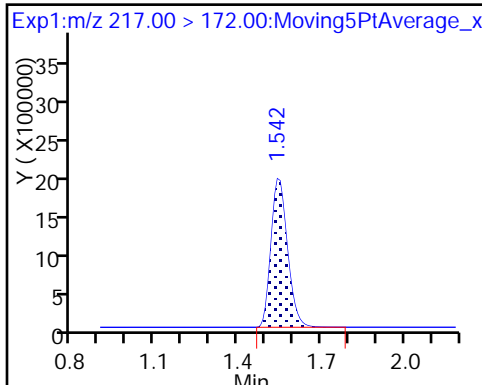
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

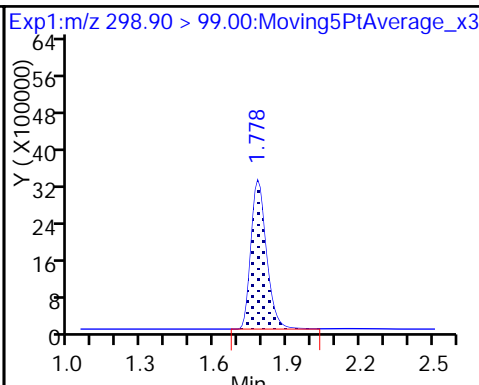
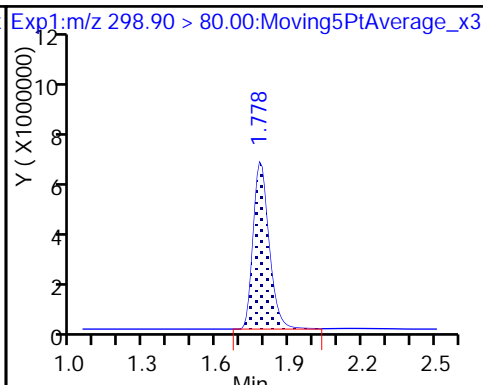
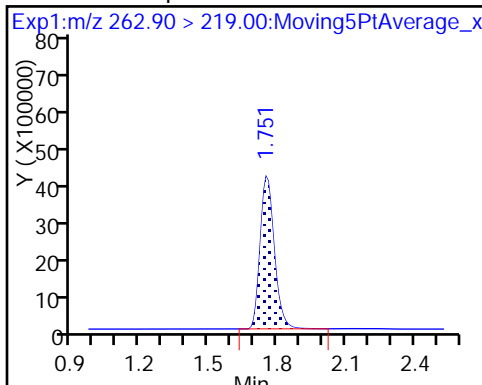
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

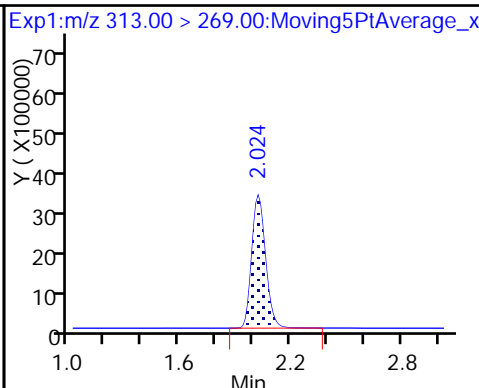
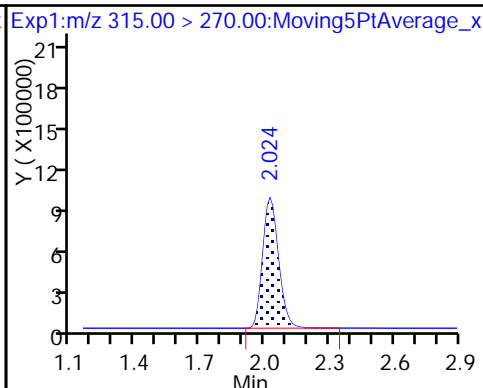
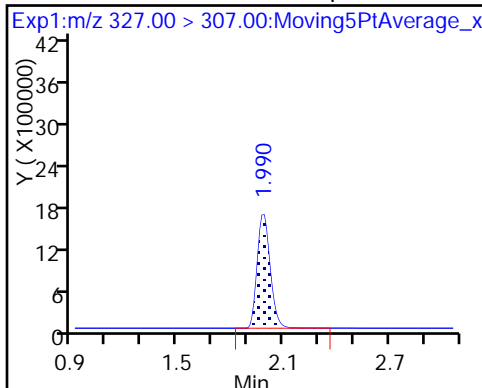
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

De 7 13C2 PFHxA

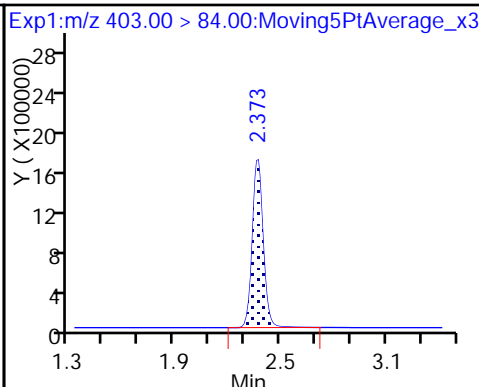
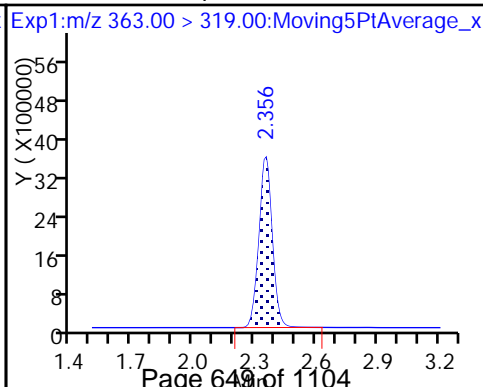
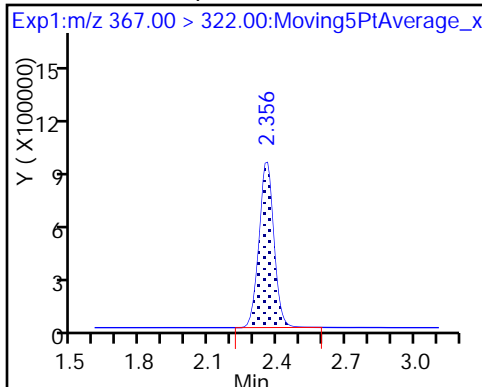
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

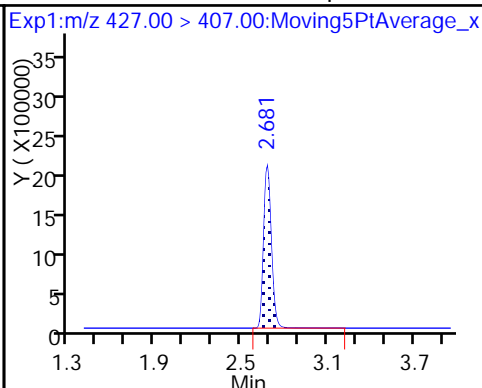
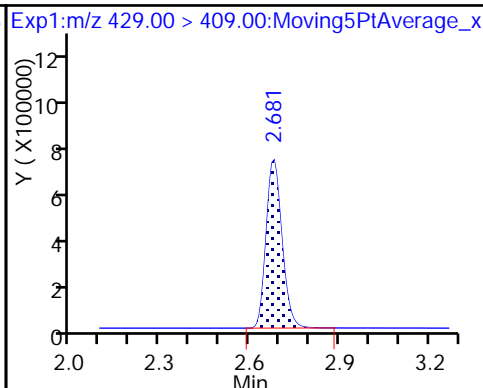
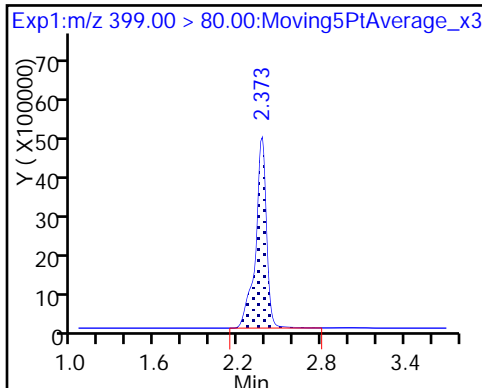
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

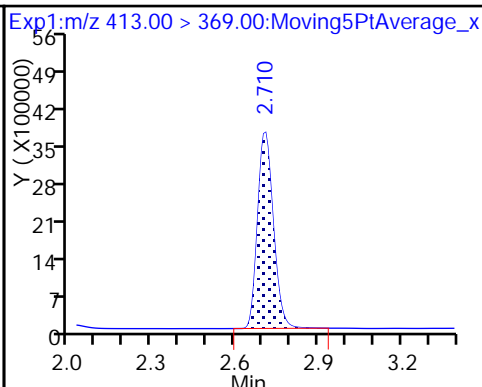
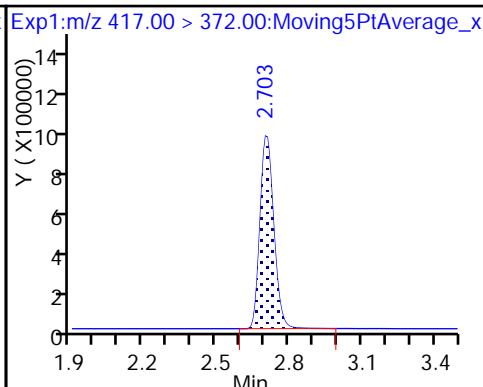
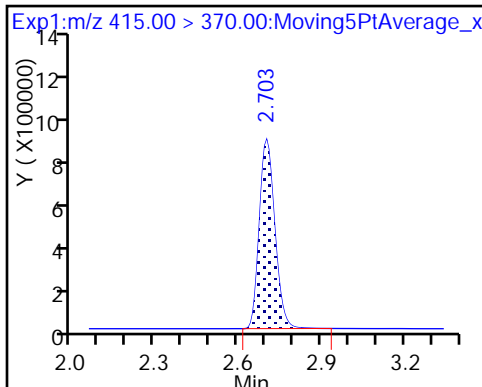
13 Sodium 1H,1H,2H,2H-perfluorooctane



* 62 13C2-PFOA

D 14 13C4 PFOA

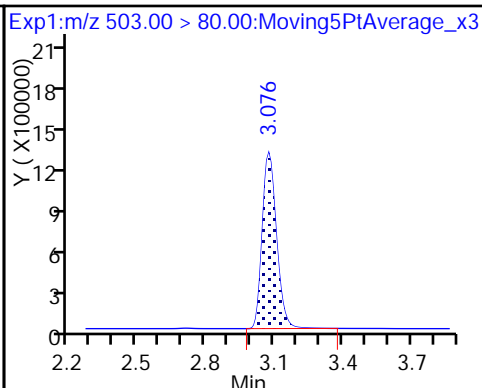
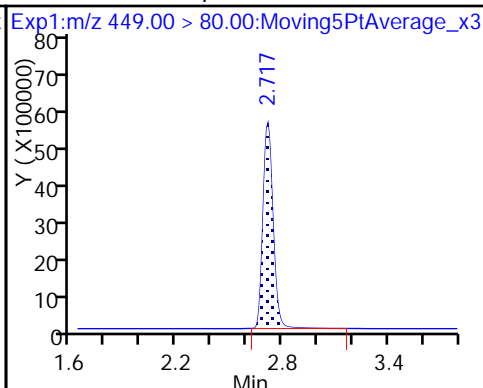
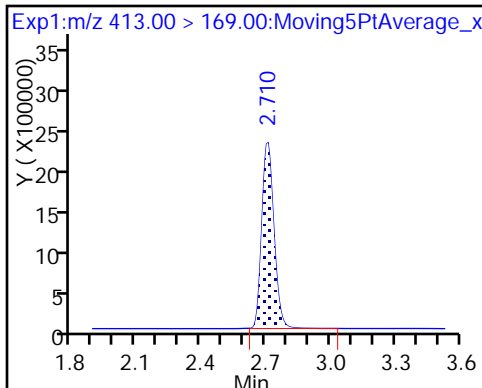
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

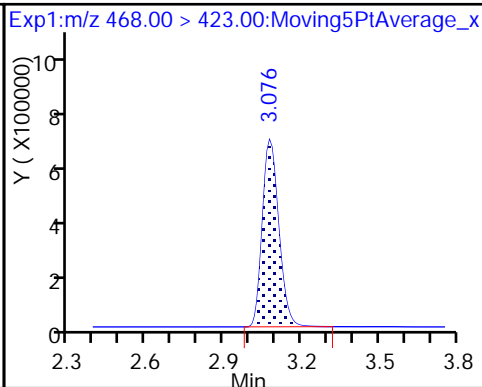
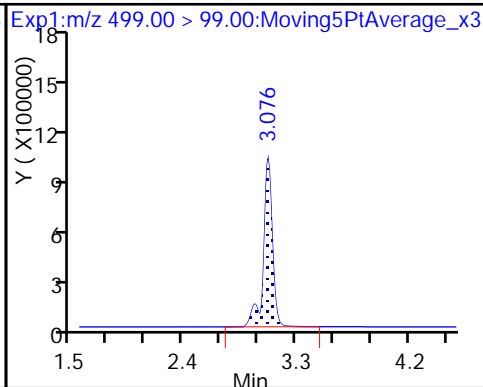
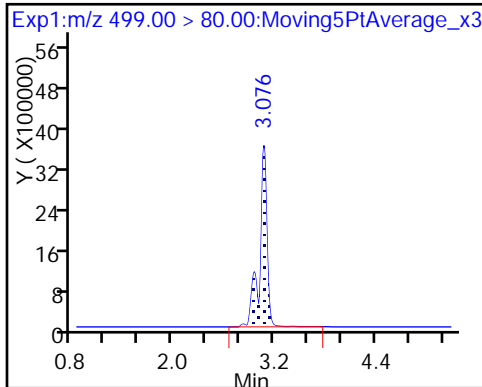
D 18 13C4 PFOS

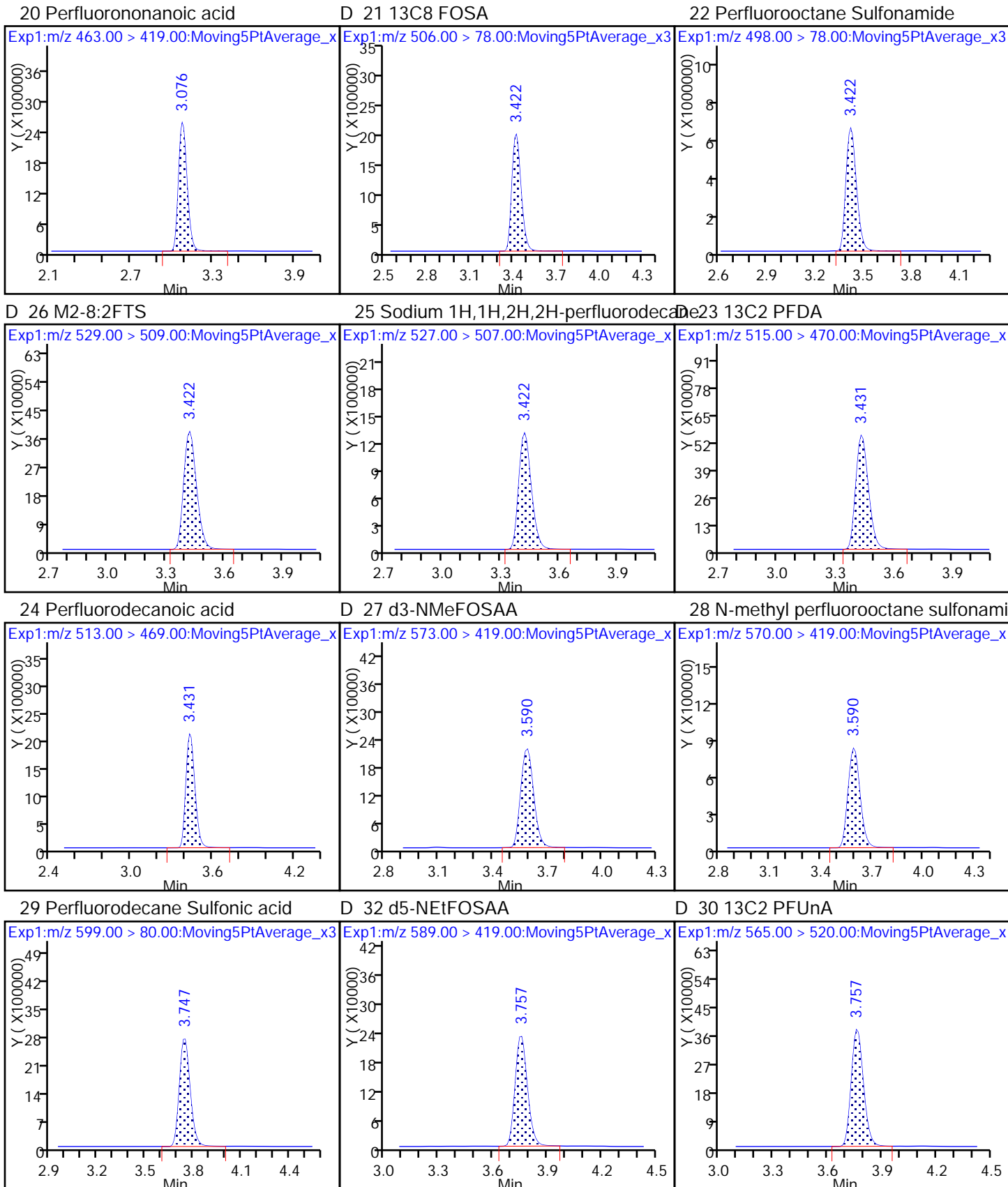


17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

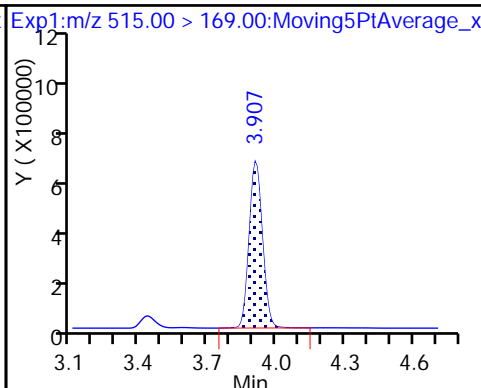
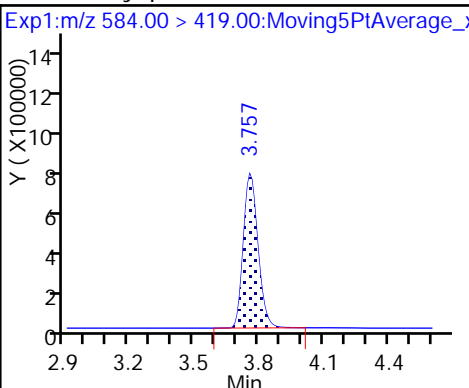
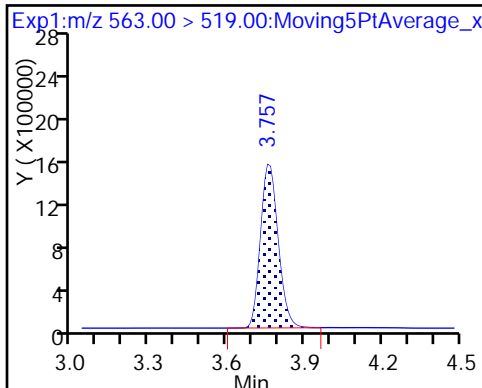




31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid D

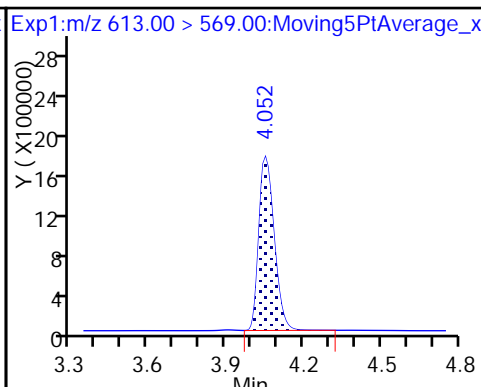
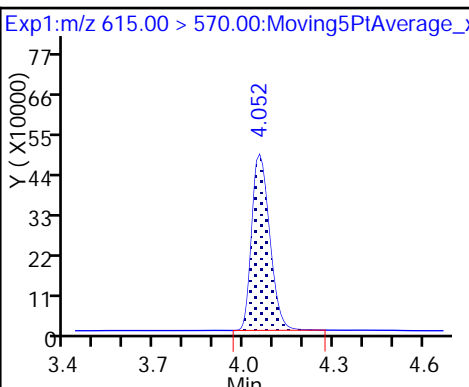
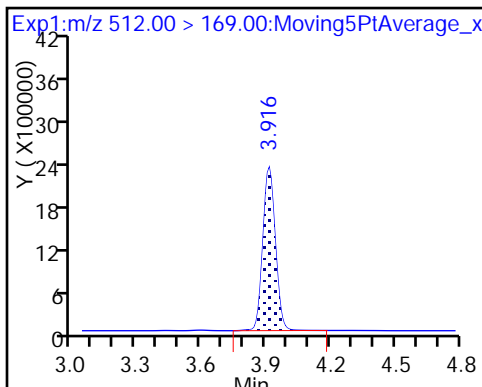
34 d-N-MeFOSA-M



35 MeFOSA

D 36 13C2 PFDaA

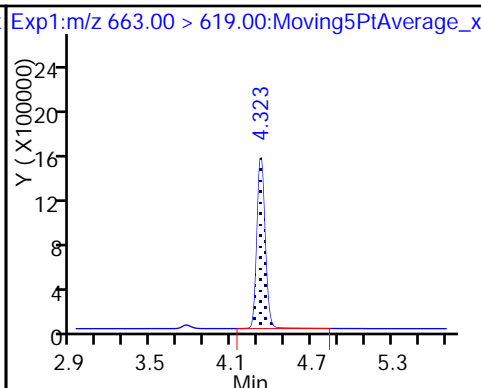
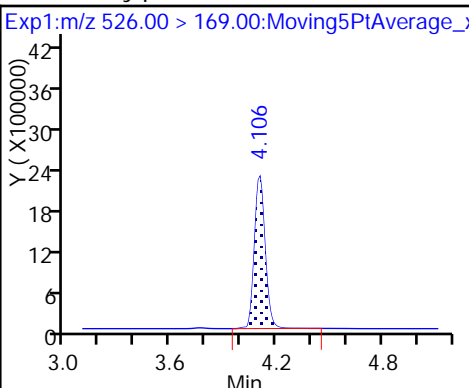
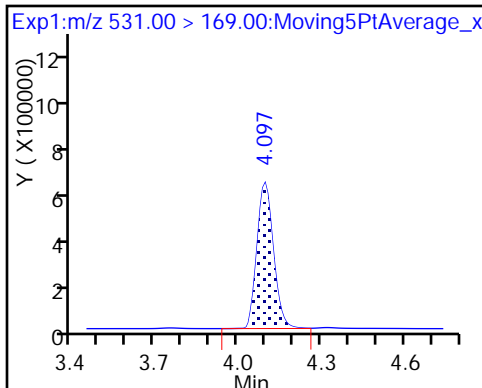
37 Perfluorododecanoic acid



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

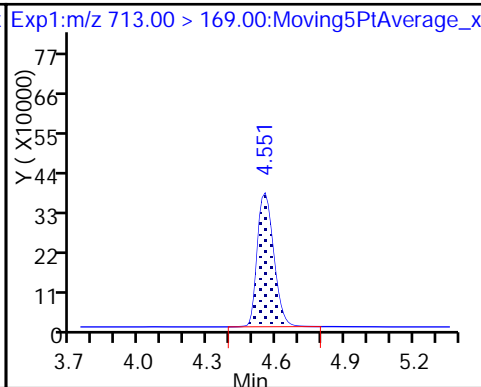
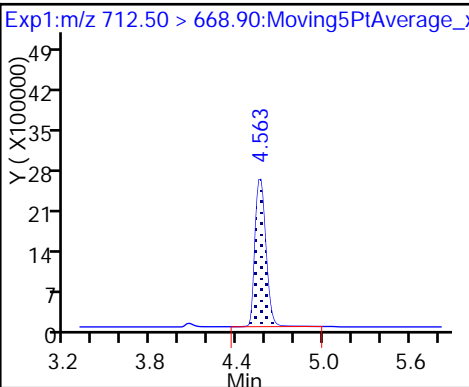
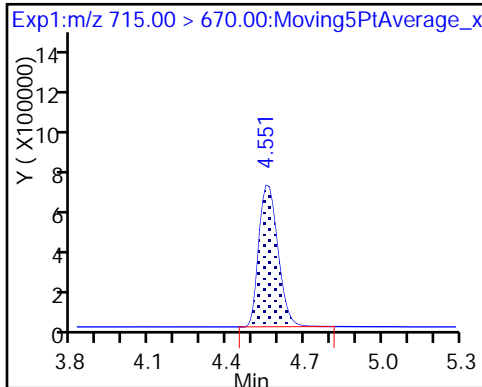
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

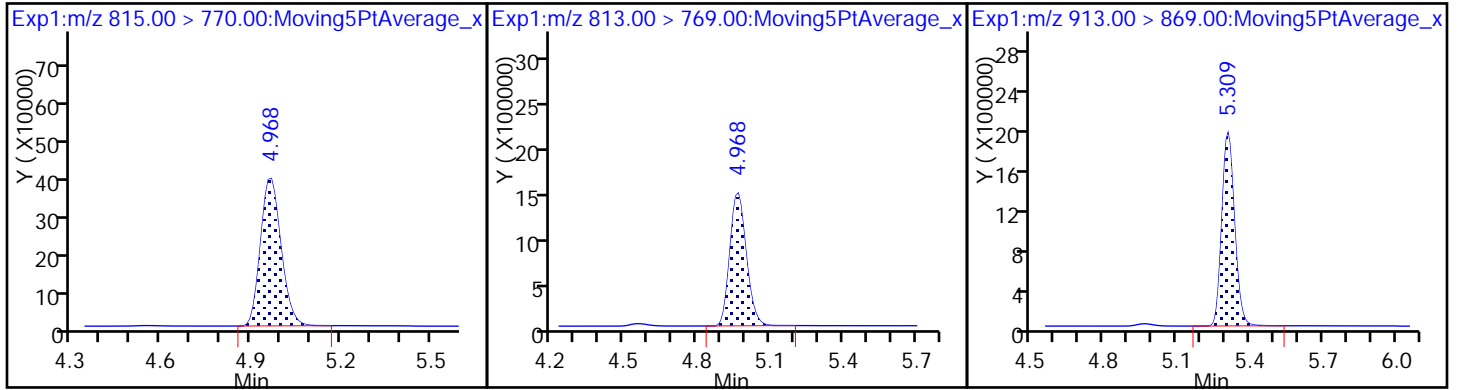
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d
 Lims ID: IC M2-4:2FTS
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 20-Jul-2017 18:04:17 ALS Bottle#: 37 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: M2:4-2FTS Calibration Std
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 21-Jul-2017 11:40:34 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|-------|
| D 60 M2-4:2FTS | 329.00 > 309.00 | 1.972 | 1.972 | 0.0 | 4111742 | NC | | | 41525 | |
| * 62 13C2-PFOA | 415.00 > 370.00 | 2.688 | 2.703 | -0.015 | 7012532 | 50.0 | | | 41240 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCM2-4:2FTSIC_00002 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Injection Date: 20-Jul-2017 18:04:17

Instrument ID: A8_N

Lims ID: IC M2-4:2FTS

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 37 Worklist Smp#: 10

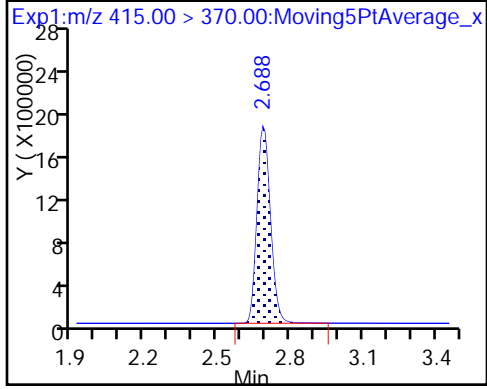
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

* 62 13C2-PFOA



FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175476/3 | 2017.07.23ICAL_003.d |
| Level 2 | IC 320-175476/4 | 2017.07.23ICAL_004.d |
| Level 3 | IC 320-175476/5 | 2017.07.23ICAL_005.d |
| Level 4 | IC 320-175476/6 | 2017.07.23ICAL_006.d |
| Level 5 | IC 320-175476/7 | 2017.07.23ICAL_007.d |
| Level 6 | IC 320-175476/8 | 2017.07.23ICAL_008.d |
| Level 7 | IC 320-175476/9 | 2017.07.23ICAL_009.d |

| ANALYTE | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | LVL 7 | | | | RT WINDOW | AVG RT |
|--|-------|-------|-------|-------|-------|-------|-------|--|--|--|---------------|--------|
| Perfluorobutanoic acid (PFBA) | 1.572 | 1.563 | 1.563 | 1.554 | 1.565 | 1.565 | 1.563 | | | | 1.314 - 1.814 | 1.564 |
| Perfluoropentanoic acid (PFPeA) | 1.791 | 1.782 | 1.782 | 1.773 | 1.784 | 1.784 | 1.782 | | | | 1.533 - 2.033 | 1.783 |
| Perfluorobutanesulfonic acid (PFBS) | 1.820 | 1.810 | 1.809 | 1.801 | 1.802 | 1.813 | 1.800 | | | | 1.628 - 1.988 | 1.808 |
| 4:2 FTS | 2.040 | 2.029 | 2.029 | 2.018 | 2.020 | 2.032 | 2.017 | | | | 1.776 - 2.276 | 2.026 |
| Perfluorohexanoic acid (PFHxA) | 2.086 | 2.074 | 2.074 | 2.063 | 2.066 | 2.066 | 2.063 | | | | 1.820 - 2.320 | 2.070 |
| Perfluoroheptanoic acid (PFHpA) | 2.438 | 2.428 | 2.421 | 2.416 | 2.415 | 2.416 | 2.407 | | | | 2.170 - 2.670 | 2.420 |
| Perfluorohexanesulfonic acid (PFHxS) | 2.454 | 2.444 | 2.437 | 2.432 | 2.431 | 2.432 | 2.423 | | | | 2.186 - 2.686 | 2.436 |
| 6:2 FTS | 2.785 | 2.776 | 2.769 | 2.764 | 2.761 | 2.756 | 2.748 | | | | 2.516 - 3.016 | 2.766 |
| Perfluorooctanoic acid (PFOA) | 2.814 | 2.805 | 2.797 | 2.785 | 2.790 | 2.785 | 2.784 | | | | 2.544 - 3.044 | 2.794 |
| Perfluoroheptanesulfonic Acid (PFHpS) | 2.821 | 2.812 | 2.805 | 2.793 | 2.790 | 2.792 | 2.791 | | | | 2.551 - 3.051 | 2.801 |
| Perfluorooctanesulfonic acid (PFOS) | 3.198 | 3.188 | 3.179 | 3.170 | 3.168 | 3.170 | 3.160 | | | | 2.926 - 3.426 | 3.176 |
| Perfluorononanoic acid (PFNA) | 3.205 | 3.188 | 3.187 | 3.170 | 3.168 | 3.170 | 3.169 | | | | 2.930 - 3.430 | 3.180 |
| Perfluorooctane Sulfonamide (FOSA) | 3.514 | 3.509 | 3.508 | 3.499 | 3.505 | 3.510 | 3.508 | | | | 3.258 - 3.758 | 3.508 |
| 8:2 FTS | 3.555 | 3.538 | 3.537 | 3.517 | 3.515 | 3.520 | 3.518 | | | | 3.278 - 3.778 | 3.529 |
| Perfluorodecanoic acid (PFDA) | 3.565 | 3.548 | 3.547 | 3.537 | 3.526 | 3.542 | 3.529 | | | | 3.292 - 3.792 | 3.542 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | 3.724 | 3.707 | 3.706 | 3.695 | 3.691 | 3.698 | 3.684 | | | | 3.451 - 3.951 | 3.701 |
| Perfluorodecanesulfonic acid (PFDS) | 3.882 | 3.857 | 3.865 | 3.846 | 3.845 | 3.851 | 3.841 | | | | 3.605 - 4.105 | 3.855 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | 3.899 | 3.884 | 3.882 | 3.864 | 3.864 | 3.870 | 3.861 | | | | 3.625 - 4.125 | 3.875 |
| Perfluoroundecanoic acid (PFUnA) | 3.899 | 3.884 | 3.882 | 3.864 | 3.864 | 3.870 | 3.861 | | | | 3.625 - 4.125 | 3.875 |
| MeFOSA | 3.996 | 3.990 | 3.996 | 3.985 | 3.984 | 4.003 | 3.989 | | | | 3.742 - 4.242 | 3.992 |
| Perfluorododecanoic acid (PFDoA) | 4.197 | 4.181 | 4.178 | 4.157 | 4.160 | 4.158 | 4.147 | | | | 3.918 - 4.418 | 4.168 |
| N-EtFOSA-M | 4.178 | 4.172 | 4.186 | 4.174 | 4.177 | 4.184 | 4.174 | | | | 3.928 - 4.428 | 4.178 |
| Perfluorotridecanoic Acid (PFTriA) | 4.462 | 4.446 | 4.443 | 4.422 | 4.424 | 4.430 | 4.411 | | | | 4.184 - 4.684 | 4.434 |
| Perfluorotetradecanoic acid (PFTeA) | 4.707 | 4.691 | 4.689 | 4.663 | 4.661 | 4.667 | 4.654 | | | | 4.426 - 4.926 | 4.676 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | +++++ | 5.108 | 5.106 | 5.087 | 5.081 | 5.079 | 5.058 | | | | 4.842 - 5.342 | 5.087 |
| Perfluoro-n-octadecanoic acid (PFODA) | 5.502 | 5.480 | 5.469 | 5.449 | 5.442 | 5.441 | 5.422 | | | | 5.208 - 5.708 | 5.458 |
| 13C4 PFBA | 1.563 | 1.563 | 1.563 | 1.554 | 1.555 | 1.556 | 1.554 | | | | 1.308 - 1.808 | 1.558 |
| 13C5 PFPeA | 1.791 | 1.782 | 1.782 | 1.773 | 1.774 | 1.784 | 1.773 | | | | 1.530 - 2.030 | 1.780 |
| 13C2 PFHxA | 2.086 | 2.074 | 2.074 | 2.063 | 2.066 | 2.066 | 2.063 | | | | 1.820 - 2.320 | 2.070 |
| 13C4-PFHpA | 2.438 | 2.428 | 2.421 | 2.416 | 2.415 | 2.416 | 2.407 | | | | 2.170 - 2.670 | 2.420 |
| 18O2 PFHxS | 2.454 | 2.444 | 2.437 | 2.432 | 2.431 | 2.432 | 2.423 | | | | 2.186 - 2.686 | 2.436 |
| M2-6:2 FTS | 2.785 | 2.776 | 2.769 | 2.764 | 2.761 | 2.756 | 2.748 | | | | 2.516 - 3.016 | 2.766 |

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

| ANALYTE | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | LVL 7 | | | | RT WINDOW | AVG RT |
|--------------|-------|-------|-------|-------|-------|-------|-------|--|--|--|---------------|--------|
| 13C4 PFOA | 2.814 | 2.805 | 2.797 | 2.785 | 2.790 | 2.785 | 2.777 | | | | 2.543 - 3.043 | 2.793 |
| 13C4 PFOS | 3.198 | 3.188 | 3.179 | 3.170 | 3.168 | 3.170 | 3.160 | | | | 2.926 - 3.426 | 3.176 |
| 13C5 PFNA | 3.205 | 3.188 | 3.187 | 3.170 | 3.168 | 3.170 | 3.169 | | | | 2.930 - 3.430 | 3.180 |
| 13C8 FOSA | 3.514 | 3.509 | 3.508 | 3.499 | 3.495 | 3.510 | 3.499 | | | | 3.255 - 3.755 | 3.505 |
| M2-8:2FTS | 3.555 | 3.538 | 3.537 | 3.517 | 3.515 | 3.520 | 3.518 | | | | 3.278 - 3.778 | 3.529 |
| 13C2 PFDA | 3.565 | 3.548 | 3.547 | 3.527 | 3.526 | 3.531 | 3.529 | | | | 3.289 - 3.789 | 3.539 |
| d3-NMeFOSAA | 3.724 | 3.707 | 3.706 | 3.685 | 3.691 | 3.687 | 3.684 | | | | 3.448 - 3.948 | 3.698 |
| d5-NEtFOSAA | 3.890 | 3.875 | 3.874 | 3.855 | 3.854 | 3.861 | 3.851 | | | | 3.616 - 4.116 | 3.866 |
| 13C2 PFUnA | 3.899 | 3.884 | 3.882 | 3.864 | 3.864 | 3.870 | 3.861 | | | | 3.625 - 4.125 | 3.875 |
| d-N-MeFOSA-M | 3.989 | 3.982 | 3.989 | 3.977 | 3.984 | 3.995 | 3.989 | | | | 3.736 - 4.236 | 3.986 |
| 13C2 PFDoA | 4.197 | 4.181 | 4.178 | 4.157 | 4.160 | 4.167 | 4.147 | | | | 3.919 - 4.419 | 4.170 |
| d-N-EtFOSA-M | 4.170 | 4.172 | 4.178 | 4.165 | 4.168 | 4.184 | 4.174 | | | | 3.923 - 4.423 | 4.173 |
| 13C2-PFTeDA | 4.707 | 4.691 | 4.689 | 4.663 | 4.661 | 4.667 | 4.654 | | | | 4.426 - 4.926 | 4.676 |
| 13C2-PFHxDA | 5.128 | 5.108 | 5.106 | 5.079 | 5.081 | 5.079 | 5.058 | | | | 4.841 - 5.341 | 5.091 |

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175476/3 | 2017.07.23ICAL_003.d |
| Level 2 | IC 320-175476/4 | 2017.07.23ICAL_004.d |
| Level 3 | IC 320-175476/5 | 2017.07.23ICAL_005.d |
| Level 4 | IC 320-175476/6 | 2017.07.23ICAL_006.d |
| Level 5 | IC 320-175476/7 | 2017.07.23ICAL_007.d |
| Level 6 | IC 320-175476/8 | 2017.07.23ICAL_008.d |
| Level 7 | IC 320-175476/9 | 2017.07.23ICAL_009.d |

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|-------------|------------------|------------------|------------------|--------|------------|-------------|------------|----|---|--------|------|------|----------|------------|---|----------------|
| | LVL 1 LVL 5 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 | | B | M1 | M2 | | | | | | | | |
| 13C4 PFBA | 152053 157681 | 163980 154959 | 154495 144194 | 164812 | Ave | | 156024.871 | | | 4.6 | | 50.0 | | | | |
| 13C5 PFPeA | 112330 113367 | 114901 107128 | 114901 97483 | 114991 | Ave | | 110495.974 | | | 5.7 | | 50.0 | | | | |
| 13C2 PFHxA | 99251 101483 | 106825 95312 | 104111 95869 | 105244 | Ave | | 101156.454 | | | 4.5 | | 50.0 | | | | |
| 13C4-PFHpA | 82694 85260 | 86913 82470 | 90044 73260 | 86129 | Ave | | 83824.1743 | | | 6.4 | | 50.0 | | | | |
| 18O2 PFHxS | 132676 140952 | 140772 136009 | 138889 130681 | 142083 | Ave | | 137437.629 | | | 3.2 | | 50.0 | | | | |
| M2-6:2FTS | 44370 49800 | 49627 46134 | 46905 47140 | 48942 | Ave | | 47559.6782 | | | 4.2 | | 50.0 | | | | |
| 13C4 PFOA | 83673 88195 | 87871 73565 | 84657 66554 | 90489 | Ave | | 82143.4457 | | | 10.7 | | 50.0 | | | | |
| 13C4 PFOS | 109299 107020 | 110882 109073 | 108369 107040 | 105715 | Ave | | 108199.540 | | | 1.6 | | 50.0 | | | | |
| 13C5 PFNA | 69868 65902 | 70634 61867 | 69820 57186 | 64906 | Ave | | 65740.4057 | | | 7.5 | | 50.0 | | | | |
| 13C8 FOSA | 180231 189242 | 187050 179948 | 182777 175979 | 184386 | Ave | | 182801.637 | | | 2.5 | | 50.0 | | | | |
| M2-8:2FTS | 36776 38858 | 35522 34801 | 36506 36177 | 36861 | Ave | | 36500.1879 | | | 3.5 | | 50.0 | | | | |
| 13C2 PFDA | 54727 56447 | 59217 51539 | 59463 52282 | 57178 | Ave | | 55836.0714 | | | 5.6 | | 50.0 | | | | |
| d3-NMeFOSAA | 21012 22957 | 20987 21375 | 21804 22675 | 21311 | Ave | | 21731.6800 | | | 3.6 | | 50.0 | | | | |
| d5-NMeFOSAA | 21868 21108 | 22646 21365 | 22738 21137 | 22655 | Ave | | 21930.9771 | | | 3.4 | | 50.0 | | | | |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD | # | MAX %RSD | R ² OR COD | # | MIN R ² OR COD |
|--------------|----------------|----------------|----------------|-------|---------------|-------------|------------|----|---|--------|------|---|-------------|--------------------------|---|------------------------------|
| | LVL 1 LVL 5 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 | | B | M1 | M2 | | | | | | | | |
| 13C2 PFUnA | 44988 38449 | 44201 37291 | 43197 36369 | 40609 | Ave | | 40729.2057 | | | 8.5 | | | 50.0 | | | |
| d-N-MeFOSA-M | 43738 47802 | 46683 49088 | 45921 50400 | 46173 | Ave | | 47115.0286 | | | 4.7 | | | 50.0 | | | |
| 13C2 PFDaA | 44229 43579 | 48028 44039 | 45365 41750 | 45595 | Ave | | 44655.0257 | | | 4.4 | | | 50.0 | | | |
| d-N-EtFOSA-M | 45907 49432 | 47864 50609 | 48019 51479 | 48529 | Ave | | 48833.9629 | | | 3.8 | | | 50.0 | | | |
| 13C2-PFTEdA | 86593 82283 | 87322 74668 | 84744 74283 | 78620 | Ave | | 81216.2029 | | | 6.7 | | | 50.0 | | | |
| 13C2-PFHxDA | 40457 40950 | 42593 41518 | 41778 38464 | 43387 | Ave | | 41306.8029 | | | 3.9 | | | 50.0 | | | |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10

Calibration End Date: 07/23/2017 13:58

Calibration ID: 32678

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|--|------------------|------------------|--------|--------|--------|------------|-------------|--------|----|---|---------|------|------|----------|------------|--------|----------------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| | LVL 6 | LVL 7 | | | | | | | | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 0.9204 0.8389 | 0.9010 0.7384 | 0.9703 | 0.9219 | 0.8832 | AveID | | 0.8820 | | | 8.5 | | 35.0 | | | | |
| Perfluoropentanoic acid (PFPeA) | 1.3238 1.0162 | 1.0545 0.8979 | 1.0382 | 0.9999 | 0.9641 | AveID | | 1.0421 | | | 12.9 | | 35.0 | | | | |
| Perfluorobutanesulfonic acid (PFBS) | 1.6998 1.3352 | 1.5456 1.1643 | 1.6131 | 1.5877 | 1.4777 | AveID | | 1.4891 | | | 12.3 | | 50.0 | | | | |
| 4:2 FTS | 1.1772 0.9459 | 0.9260 0.8438 | 1.0386 | 0.9471 | 0.9206 | AveID | | 0.9713 | | | 11.0 | | 35.0 | | | | |
| Perfluorohexanoic acid (PFHxA) | 1.0731 0.9221 | 0.9512 0.8534 | 0.9809 | 0.9481 | 0.9357 | AveID | | 0.9521 | | | 7.0 | | 35.0 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 1.2195 0.9596 | 1.0699 0.9644 | 1.0084 | 0.9973 | 0.9656 | AveID | | 1.0264 | | | 9.1 | | 35.0 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 1.3400 1.0197 | 1.1571 0.9743 | 1.0488 | 1.0267 | 1.0066 | AveID | | 1.0819 | | | 11.8 | | 35.0 | | | | |
| 6:2FTS | 0.9739 0.8557 | 0.9659 0.7586 | 0.9369 | 0.9112 | 0.8685 | AveID | | 0.8958 | | | 8.4 | | 35.0 | | | | |
| Perfluorooctanoic acid (PFOA) | 1.1606 1.0660 | 1.0051 1.0353 | 1.0728 | 1.1094 | 1.0181 | AveID | | 1.0668 | | | 5.1 | | 35.0 | | | | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 1.1568 1.0561 | 1.1294 1.0130 | 1.1726 | 1.1912 | 1.1318 | AveID | | 1.1216 | | | 5.7 | | 50.0 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 1.1299 0.9935 | 1.0601 1.0444 | 1.0888 | 1.0669 | 1.0166 | AveID | | 1.0572 | | | 4.3 | | 35.0 | | | | |
| Perfluorononanoic acid (PFNA) | 1.1047 0.9716 | 1.0187 0.9554 | 1.0561 | 1.0408 | 0.9796 | AveID | | 1.0181 | | | 5.2 | | 35.0 | | | | |
| Perfluorooctane Sulfonamide (FOSA) | 1.0272 0.8960 | 0.8713 0.7514 | 0.9579 | 0.9280 | 0.8811 | AveID | | 0.9018 | | | 9.5 | | 35.0 | | | | |
| 8:2FTS | 1.0464 0.8769 | 0.9600 0.7991 | 0.9720 | 0.8931 | 0.8273 | AveID | | 0.9107 | | | 9.6 | | 35.0 | | | | |
| Perfluorodecanoic acid (PFDA) | 1.1112 0.9934 | 0.9785 0.9171 | 0.9721 | 0.9707 | 0.9162 | AveID | | 0.9799 | | | 6.7 | | 35.0 | | | | |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | 0.8705 0.9391 | 0.9132 0.9213 | 0.8919 | 0.9276 | 0.9060 | AveID | | 0.9100 | | | 2.5 | | 35.0 | | | | |
| Perfluorodecanesulfonic acid (PFDS) | 0.6243 0.6204 | 0.6109 0.6007 | 0.6422 | 0.6351 | 0.6238 | AveID | | 0.6225 | | | 2.2 | | 50.0 | | | | |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | 0.8814 0.8445 | 0.8379 0.8378 | 0.8567 | 0.8398 | 0.8435 | AveID | | 0.8488 | | | 1.9 | | 35.0 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 1.2295 1.0508 | 1.1533 0.9719 | 1.0802 | 1.0299 | 1.0189 | L2ID | 0.1085 | 1.0255 | | | | | | 0.9990 | | 0.9900 | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|--|------------------|------------------|--------|--------|--------|------------|-------------|--------|----|---|---------|------|------|----------|------------|--------|----------------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| | LVL 6 | LVL 7 | | | | | | | | | | | | | | | |
| MeFOSA | 0.9495 0.9322 | 0.9226 0.9137 | 0.9323 | 0.8949 | 0.8832 | AveID | | 0.9183 | | | 2.5 | | 35.0 | | | | |
| Perfluorododecanoic acid (PFDoA) | 1.0282 0.8184 | 0.8102 0.9686 | 0.9356 | 0.9516 | 0.9917 | AveID | | 0.9292 | | | 9.0 | | 35.0 | | | | |
| N-EtFOSA-M | 0.9929 0.8945 | 0.9027 0.9325 | 0.9210 | 0.9341 | 0.9138 | AveID | | 0.9274 | | | 3.5 | | 35.0 | | | | |
| Perfluorotridecanoic Acid (PFTriA) | 0.9003 0.8527 | 0.8007 0.8199 | 0.8869 | 0.8608 | 0.8385 | AveID | | 0.8514 | | | 4.1 | | 50.0 | | | | |
| Perfluorotetradecanoic acid (PFTeA) | 2.0864 1.7552 | 2.2652 1.6691 | 2.0671 | 1.8798 | 1.7315 | AveID | | 1.9220 | | | 11.6 | | 50.0 | | | | |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | ++++ 0.8094 | 1.3172 0.8067 | 0.9121 | 0.7967 | 0.7855 | L2ID | 0.5273 | 0.7917 | | | | | | 1.0000 | | 0.9900 | |
| Perfluoro-n-octadecanoic acid (PFODA) | 0.9408 0.7740 | 0.6844 0.7651 | 0.7391 | 0.7194 | 0.7336 | AveID | | 0.7652 | | | 10.8 | | 50.0 | | | | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175476/3 | 2017.07.23ICAL_003.d |
| Level 2 | IC 320-175476/4 | 2017.07.23ICAL_004.d |
| Level 3 | IC 320-175476/5 | 2017.07.23ICAL_005.d |
| Level 4 | IC 320-175476/6 | 2017.07.23ICAL_006.d |
| Level 5 | IC 320-175476/7 | 2017.07.23ICAL_007.d |
| Level 6 | IC 320-175476/8 | 2017.07.23ICAL_008.d |
| Level 7 | IC 320-175476/9 | 2017.07.23ICAL_009.d |

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|-------------|------------|--------------------|--------------------|---------|---------|---------|-----------------------|----------------|-------|-------|-------|
| | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| 13C4 PFBA | Ave | 7602651 7747958 | 8198998 7209685 | 7724731 | 8240620 | 7884062 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C5 PFPeA | Ave | 5616511 5356421 | 5663549 4874149 | 5745028 | 5749559 | 5668374 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFHxA | Ave | 4962539 4765607 | 5341252 4793468 | 5205527 | 5262198 | 5074168 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C4-PFHpA | Ave | 4134680 4123520 | 4345666 3662996 | 4502179 | 4306431 | 4262989 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 18O2 PFHxS | Ave | 6275582 6433219 | 6658501 6181226 | 6569473 | 6720545 | 6667053 | 47.3 47.3 | 47.3 47.3 | 47.3 | 47.3 | 47.3 |
| M2-6:2FTS | Ave | 2107584 2191385 | 2357266 2239134 | 2227990 | 2324738 | 2365496 | 47.5 47.5 | 47.5 47.5 | 47.5 | 47.5 | 47.5 |
| 13C4 PFOA | Ave | 4183627 3678248 | 4393535 3327722 | 4232863 | 4524447 | 4409764 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C4 PFOS | Ave | 5224495 5213679 | 5300156 5116508 | 5180018 | 5053172 | 5115538 | 47.8 47.8 | 47.8 47.8 | 47.8 | 47.8 | 47.8 |
| 13C5 PFNA | Ave | 3493409 3093351 | 3531702 2859301 | 3490997 | 3245282 | 3295100 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C8 FOSA | Ave | 9011527 8997387 | 9352506 8798953 | 9138842 | 9219278 | 9462080 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| M2-8:2FTS | Ave | 1761561 1666985 | 1701481 1732871 | 1748653 | 1765647 | 1861315 | 47.9 47.9 | 47.9 47.9 | 47.9 | 47.9 | 47.9 |
| 13C2 PFDA | Ave | 2736338 2576945 | 2960870 2614091 | 2973174 | 2858875 | 2822332 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d3-NMeFOSAA | Ave | 1050614 1068765 | 1049350 1133763 | 1090209 | 1065558 | 1147829 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d5-NEtFOSAA | Ave | 1093392 1068267 | 1132292 1056852 | 1136911 | 1132733 | 1055395 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFUnA | Ave | 2249395 1864568 | 2210040 1818459 | 2159853 | 2030463 | 1922444 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|--------------|------------|--------------------|--------------------|---------|---------|---------|-----------------------|----------------|-------|-------|-------|
| | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| d-N-MeFOSA-M | Ave | 2186880 2454402 | 2334174 2520018 | 2296036 | 2308671 | 2390079 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFDoA | Ave | 2211449 2201944 | 2401406 2087489 | 2268225 | 2279772 | 2178974 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d-N-EtFOSA-M | Ave | 2295325 2530450 | 2393195 2573945 | 2400939 | 2426441 | 2471592 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2-PFTeDA | Ave | 4329665 3733385 | 4366113 3714139 | 4237183 | 3931018 | 4114168 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2-PFHxDA | Ave | 2022870 2075916 | 2129628 1923205 | 2088906 | 2169354 | 2047502 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |

Curve Type Legend:

Ave = Average

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175476/3 | 2017.07.23ICAL_003.d |
| Level 2 | IC 320-175476/4 | 2017.07.23ICAL_004.d |
| Level 3 | IC 320-175476/5 | 2017.07.23ICAL_005.d |
| Level 4 | IC 320-175476/6 | 2017.07.23ICAL_006.d |
| Level 5 | IC 320-175476/7 | 2017.07.23ICAL_007.d |
| Level 6 | IC 320-175476/8 | 2017.07.23ICAL_008.d |
| Level 7 | IC 320-175476/9 | 2017.07.23ICAL_009.d |

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|---------------------------------------|--------|------------|-------------------|--------------------|--------|---------|---------|-----------------------|--------------|-------|-------|-------|
| | | | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| | | | LVL 6 | LVL 7 | | | | LVL 6 | LVL 7 | | | |
| Perfluorobutanoic acid (PFBA) | | AveID | 69975 12999409 | 147752 21295694 | 749523 | 3038741 | 6963312 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | | AveID | 74351 10886829 | 119448 17506811 | 596471 | 2299701 | 5464599 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | | AveID | 99684 16053252 | 192335 26901153 | 990268 | 3988481 | 9206165 | 0.442 88.4 | 0.884 177 | 4.42 | 17.7 | 44.2 |
| 4:2 FTS | | AveID | 24392 4075896 | 42922 7430551 | 227509 | 865853 | 2141036 | 0.467 93.4 | 0.934 187 | 4.67 | 18.7 | 46.7 |
| Perfluorohexanoic acid (PFHxA) | | AveID | 53254 8788456 | 101614 16363337 | 510606 | 1995591 | 4748124 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | | AveID | 50421 7914021 | 92990 14130024 | 453995 | 1717995 | 4116140 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | | AveID | 80894 12621118 | 148222 23173026 | 662781 | 2654948 | 6455854 | 0.455 91.0 | 0.910 182 | 4.55 | 18.2 | 45.5 |
| 6:2FTS | | AveID | 20482 3742357 | 45441 6779939 | 208291 | 845572 | 2050076 | 0.474 94.8 | 0.948 190 | 4.74 | 19.0 | 47.4 |
| Perfluorooctanoic acid (PFOA) | | AveID | 48556 7841830 | 88318 13780241 | 454115 | 2007679 | 4489705 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | | AveID | 60184 10965918 | 119224 20645661 | 604887 | 2397725 | 5765727 | 0.476 95.2 | 0.952 190 | 4.76 | 19.0 | 47.6 |
| Perfluorooctanesulfonic acid (PFOS) | | AveID | 57301 10055816 | 109083 20749676 | 547466 | 2093353 | 5048139 | 0.464 92.8 | 0.928 186 | 4.64 | 18.6 | 46.4 |
| Perfluorononanoic acid (PFNA) | | AveID | 38591 6011197 | 71952 10926680 | 368688 | 1351075 | 3227789 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | | AveID | 92569 16123202 | 162978 26444981 | 875387 | 3422187 | 8336711 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| 8:2FTS | | AveID | 18433 2923571 | 32668 5538945 | 169963 | 630739 | 1539793 | 0.479 95.8 | 0.958 192 | 4.79 | 19.2 | 47.9 |
| Perfluorodecanoic acid (PFDA) | | AveID | 30405 5119744 | 57947 9589389 | 289035 | 1110082 | 2585881 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|--|--------|------------|------------------|--------------------|--------|---------|---------|-----------------------|----------------|-------|-------|-------|
| | | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | | AveID | 9146 2007359 | 19166 4177961 | 97239 | 395381 | 1039957 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | | AveID | 32887 6522922 | 65294 12396187 | 335448 | 1294446 | 3217983 | 0.482 96.4 | 0.964 193 | 4.82 | 19.3 | 48.2 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | | AveID | 9637 1804400 | 18976 3541684 | 97401 | 380509 | 890173 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | | L2ID | 27657 3918710 | 50978 7069518 | 233311 | 836437 | 1958756 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| MeFOSA | | AveID | 20765 4575819 | 43069 9209985 | 214053 | 826400 | 2110821 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | | AveID | 22738 3604171 | 38911 8087946 | 212214 | 867758 | 2160889 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| N-EtFOSA-M | | AveID | 22791 4527078 | 43208 9600643 | 221116 | 906622 | 2258565 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | | AveID | 19909 3755028 | 38455 6846516 | 201160 | 784927 | 1827022 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | | AveID | 46140 7729497 | 108795 13936575 | 468872 | 1714163 | 3772981 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | | L2ID | +++++ 3564510 | 63261 6735864 | 206894 | 726480 | 1711676 | +++++ 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | | AveID | 20805 3408805 | 32872 6388834 | 167649 | 655993 | 1598412 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |

Curve Type Legend:

| |
|----------------------------------|
| AveID = Average isotope dilution |
| L2ID = Linear 1/conc^2 IsoDil |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_003.d
 Lims ID: IC L1 Full
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 23-Jul-2017 13:10:08 ALS Bottle#: 28 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 11:24:28 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 14:54:09

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.563 | 1.558 | 0.005 | 7602651 | 48.7 | | 97.5 | 46107 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.572 | 1.564 | 0.008 | 1.000 | 69975 | 0.5218 | 104 | 38.6 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.791 | 1.780 | 0.011 | 5616511 | 50.8 | | 102 | 65380 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.791 | 1.783 | 0.008 | 1.000 | 74351 | 0.6352 | 127 | 49.5 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.820 | 1.806 | 0.014 | 126219 | NC | | | 4712 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.820 | 1.808 | 0.012 | 1.000 | 99684 | 0.5046 | 114 | 127 | |
| | 298.90 > 99.00 | 1.820 | 1.808 | 0.012 | 1.000 | 40913 | 2.44(0.00-0.00) | 114 | 105 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.040 | 2.026 | 0.014 | 1.000 | 24392 | 0.5660 | 121 | 1630 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.086 | 2.070 | 0.016 | 4962539 | 49.1 | | 98.1 | 40745 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.086 | 2.070 | 0.016 | 1.000 | 53254 | 0.5636 | 113 | 176 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.438 | 2.420 | 0.018 | 1.000 | 50421 | 0.5941 | 119 | 222 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.438 | 2.420 | 0.018 | 4134680 | 49.3 | | 98.7 | 25854 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.454 | 2.436 | 0.018 | 1.000 | 80894 | 0.5636 | 124 | 236 | M |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.454 | 2.436 | 0.018 | 6275582 | 45.7 | | 96.5 | 35940 | M |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.785 | 2.766 | 0.019 | 2107584 | 44.3 | 93.3 | 25990 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.785 | 2.766 | 0.019 | 1.000 | 20482 | 0.5153 | 109 | 926 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.814 | 2.793 | 0.021 | 4183627 | 50.9 | 102 | 29580 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.814 | 2.794 | 0.020 | 1.000 | 48556 | 0.5440 | 109 | 12.2 |
| | 413.00 | > 169.00 | 2.814 | 2.794 | 0.020 | 1.000 | 30449 | 1.59(0.90-1.10) | 109 | 425 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.821 | 2.801 | 0.020 | 1.000 | 60184 | 0.4909 | 103 | 2086 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.198 | 3.176 | 0.022 | 1.000 | 57301 | 0.4959 | 107 | 1218 |
| | 499.00 | > 99.00 | 3.198 | 3.176 | 0.022 | 1.000 | 13200 | 4.34(0.90-1.10) | 107 | 145 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.198 | 3.176 | 0.022 | 5224495 | 48.3 | 101 | 23764 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.205 | 3.180 | 0.025 | 1.000 | 38591 | 0.5425 | 109 | 133 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.205 | 3.180 | 0.025 | 3493409 | 53.1 | 106 | 23963 | |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.514 | 3.505 | 0.009 | 9011527 | 49.3 | 98.6 | 17630 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.514 | 3.508 | 0.006 | 1.000 | 92569 | 0.5695 | 114 | 2269 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.555 | 3.528 | 0.027 | 1761561 | 48.3 | 101 | 26196 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.555 | 3.528 | 0.027 | 1.000 | 18433 | 0.5504 | 115 | 979 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.565 | 3.539 | 0.026 | 2736338 | 49.0 | 98.0 | 9672 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.565 | 3.542 | 0.023 | 1.000 | 30405 | 0.5670 | 113 | 152 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.724 | 3.698 | 0.026 | 1050614 | 48.3 | 96.7 | 13899 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.724 | 3.701 | 0.023 | 1.000 | 9146 | 0.4783 | 95.7 | 491 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.882 | 3.855 | 0.027 | 1.000 | 32887 | 0.4834 | 100 | 1596 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.890 | 3.866 | 0.024 | 1093392 | 49.9 | 99.7 | 4339 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.899 | 3.875 | 0.024 | 2249395 | 55.2 | 110 | 13924 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.899 | 3.875 | 0.024 | 1.000 | 27657 | 0.4937 | 98.7 | 87.2 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.899 | 3.875 | 0.024 | 1.002 | 9637 | 0.5192 | 104 | 309 |
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.989 | 3.986 | 0.003 | 2186880 | 46.4 | 92.8 | 831 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 35 MeFOSA | 512.00 > 169.00 | 3.996 | 3.992 | 0.004 | 1.000 | 20765 | 0.5170 | 103 | 808 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.197 | 4.168 | 0.029 | 1.000 | 22738 | 0.5533 | 111 | 7.4 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.197 | 4.169 | 0.028 | | 2211449 | 49.5 | 99.0 | 4699 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.170 | 4.173 | -0.003 | | 2295325 | 47.0 | 94.0 | 5167 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.178 | 4.178 | 0.0 | 1.000 | 22791 | 0.5354 | 107 | 774 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.462 | 4.434 | 0.028 | 1.000 | 19909 | 0.5287 | 106 | 6.4 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.707 | 4.676 | 0.031 | | 4329665 | 53.3 | 107 | 12255 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.707 | 4.676 | 0.031 | 1.000 | 46140 | 0.5428 | 109 | 4.8 | |
| | 713.00 > 169.00 | 4.696 | 4.676 | 0.020 | 0.998 | 7507 | 6.15(0.00-0.00) | 109 | 140 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.128 | 5.091 | 0.037 | | 2022870 | 49.0 | 97.9 | 6796 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.128 | 5.092 | 0.036 | 1.000 | 43815 | 0.5853 | 117 | 9.6 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.502 | 5.458 | 0.044 | 1.000 | 20805 | 0.6147 | 123 | 11.1 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L1_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_003.d

Injection Date: 23-Jul-2017 13:10:08

Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 28

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

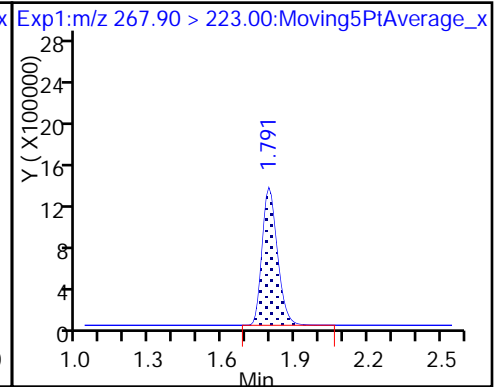
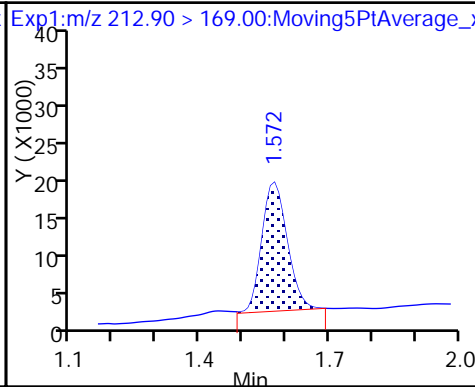
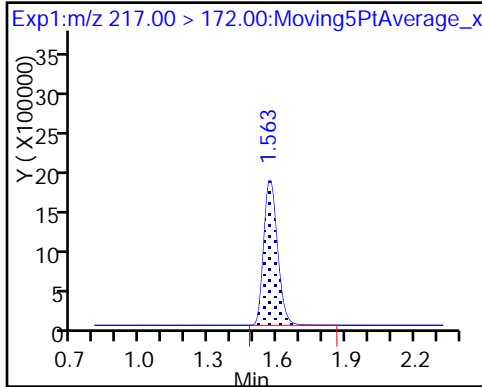
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

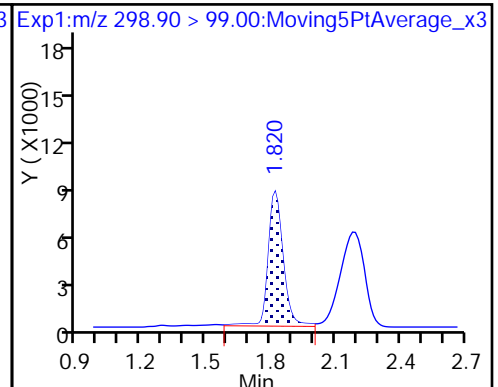
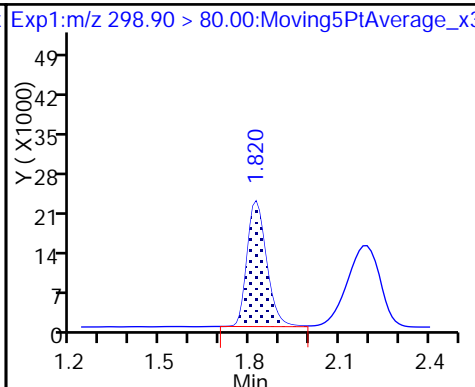
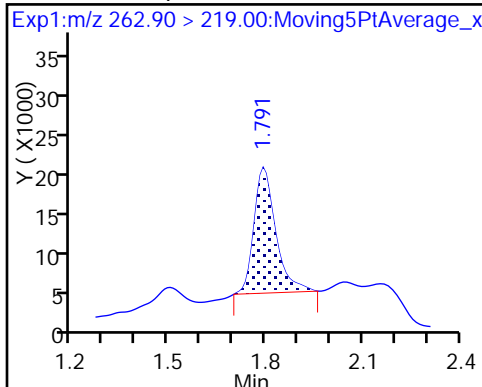
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

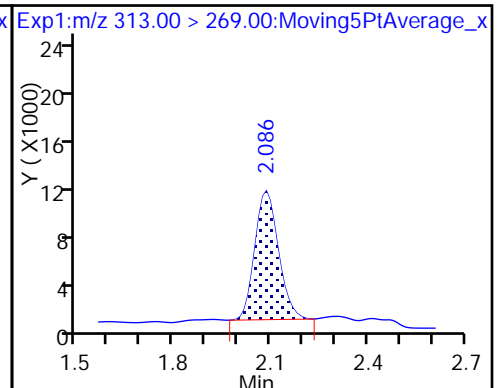
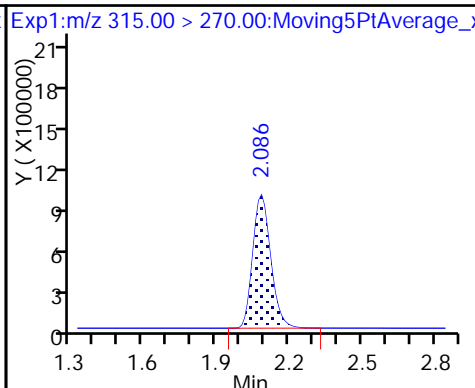
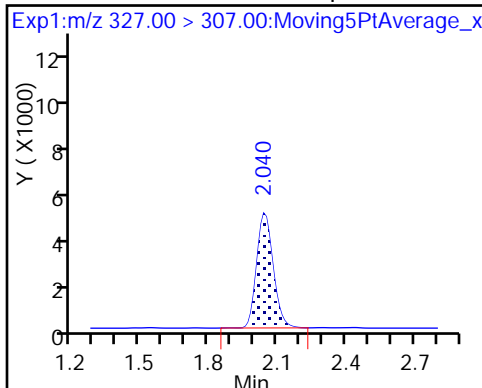
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoate

D 7 13C2 PFHxA

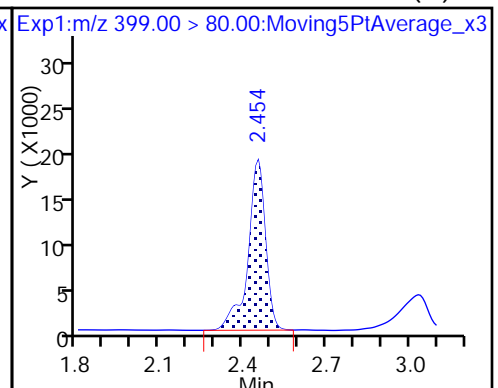
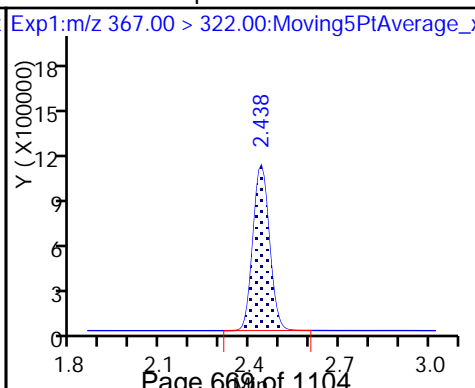
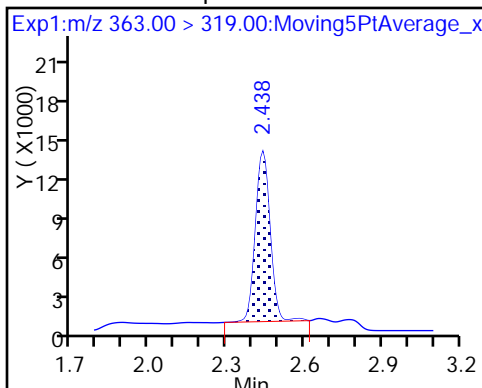
6 Perfluorohexanoic acid



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

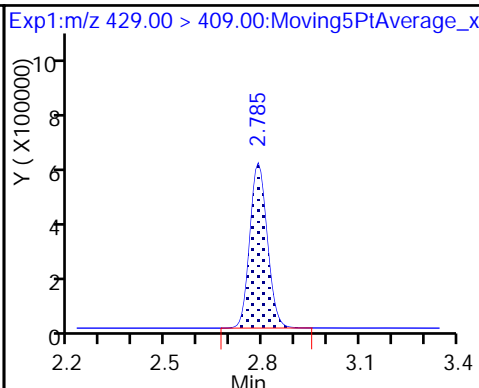
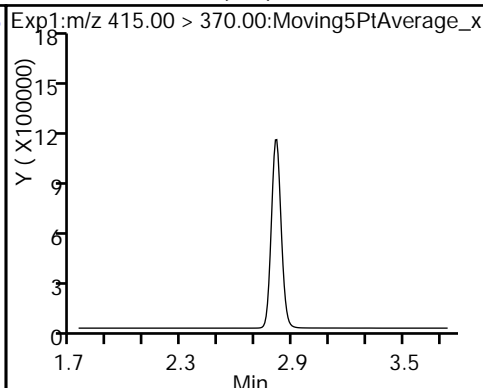
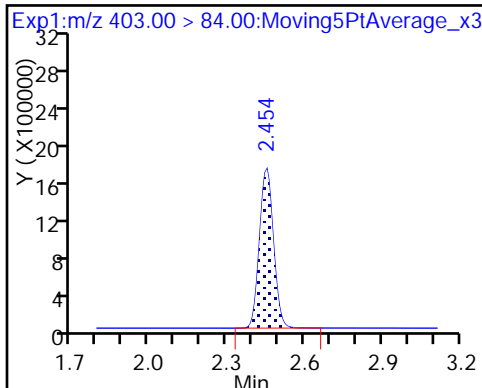
8 Perfluorohexanesulfonic acid (M)



D 11 18O2 PFHxS

* 62 13C2-PFOA (ND)

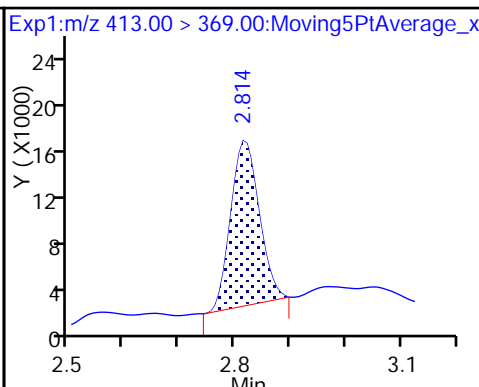
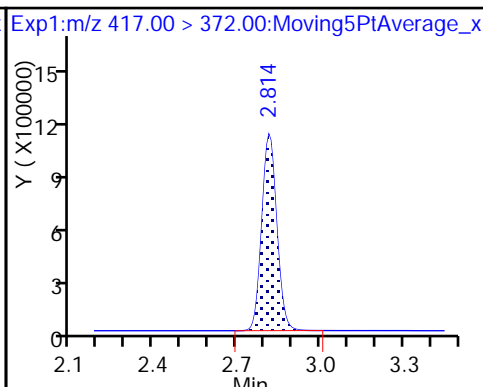
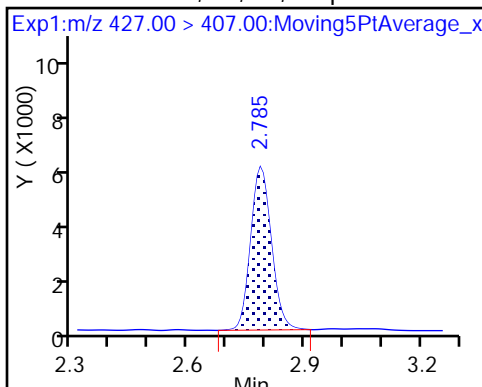
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctadecanoic acid

D 14 13C4 PFOA

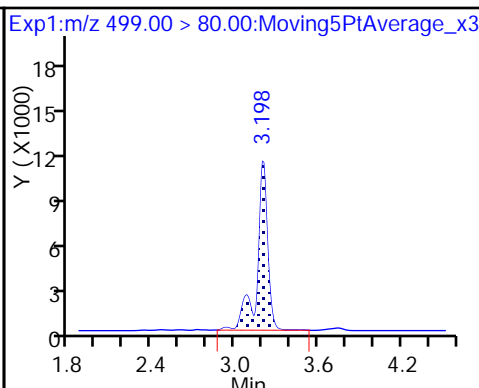
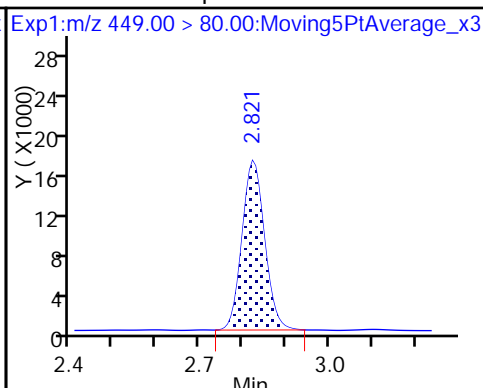
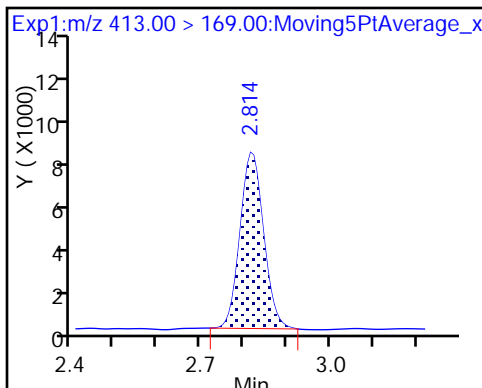
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

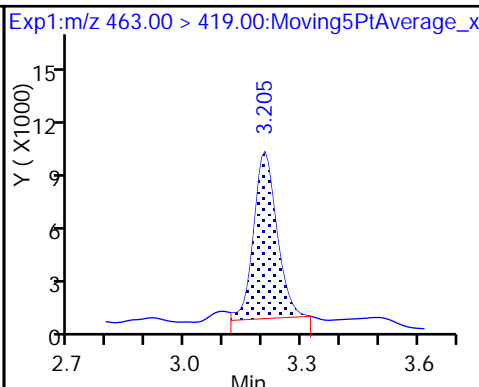
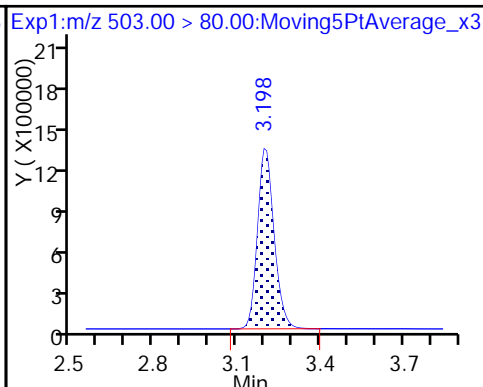
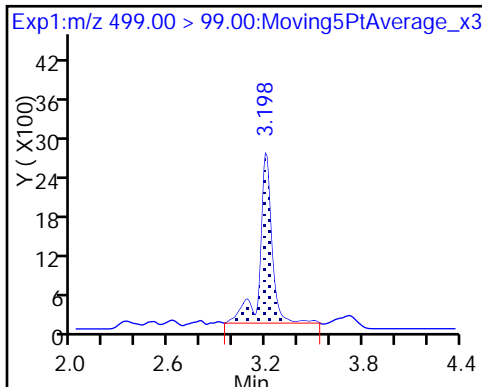
17 Perfluorooctane sulfonic acid



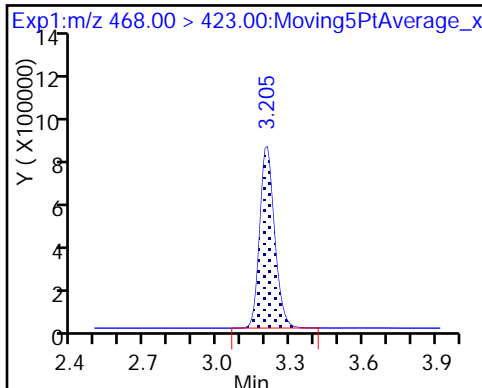
17 Perfluorooctane sulfonic acid

D 18 13C4 PFOS

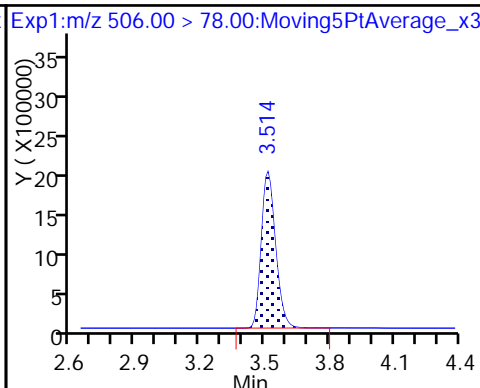
20 Perfluorononanoic acid



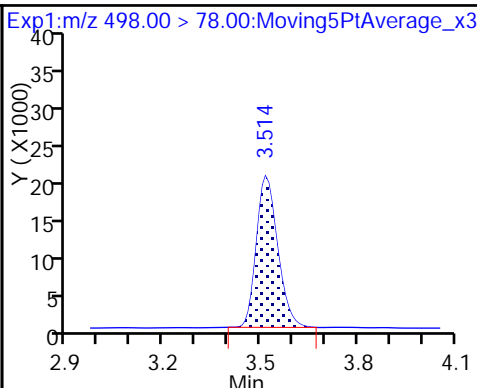
D 19 13C5 PFNA



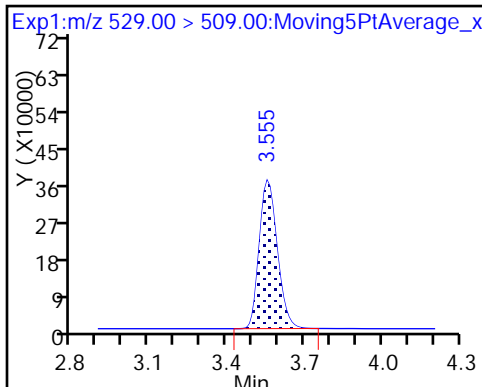
D 21 13C8 FOSA



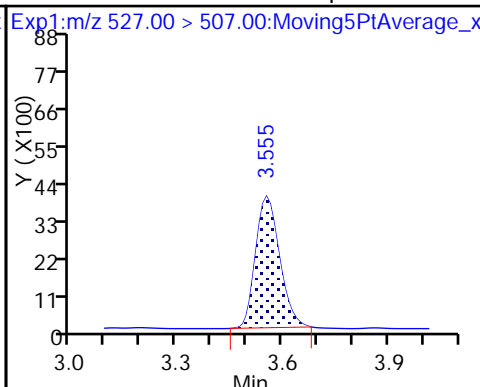
22 Perfluorooctane Sulfonamide



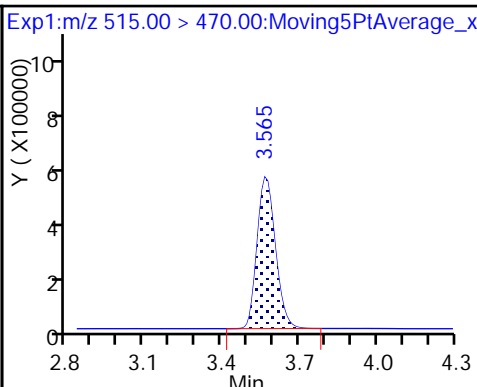
D 26 M2-8:2FTS



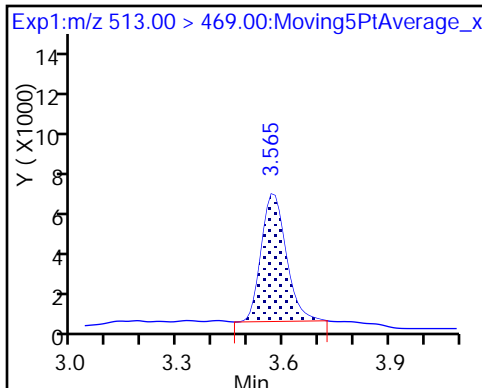
25 Sodium 1H,1H,2H,2H-perfluorodeca



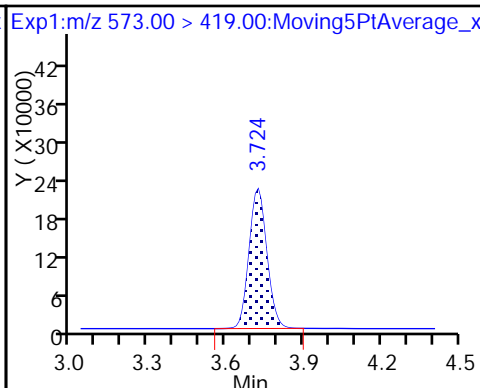
De23 13C2 PFDA



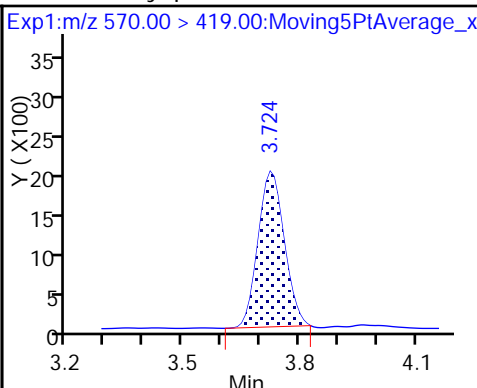
24 Perfluorodecanoic acid



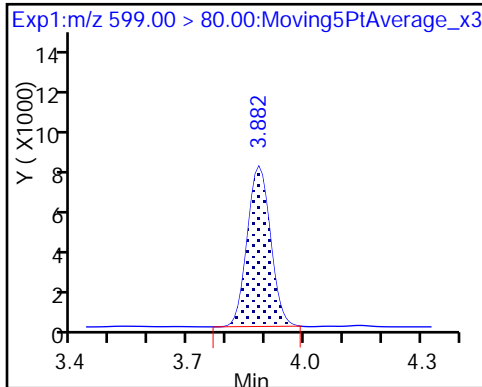
D 27 d3-NMeFOSAA



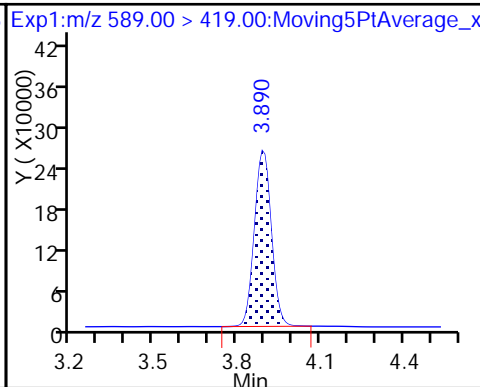
28 N-methyl perfluorooctane sulfonami



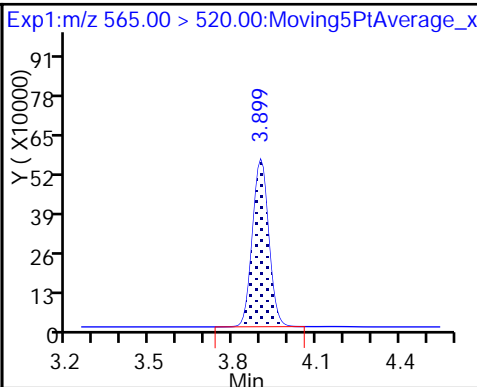
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA



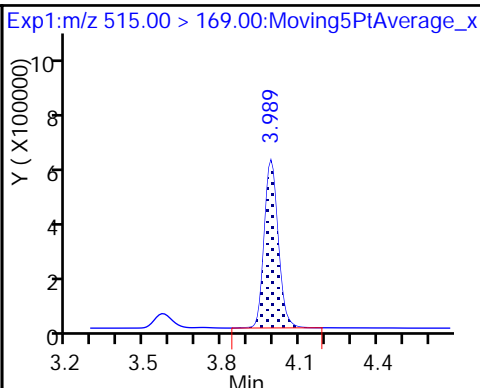
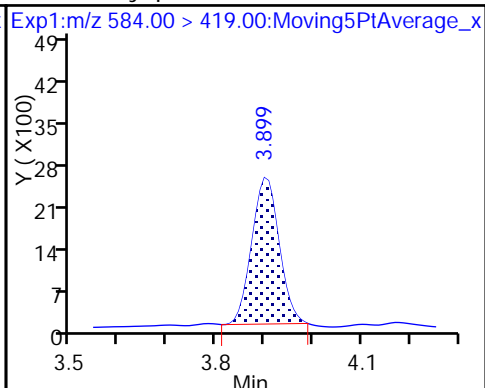
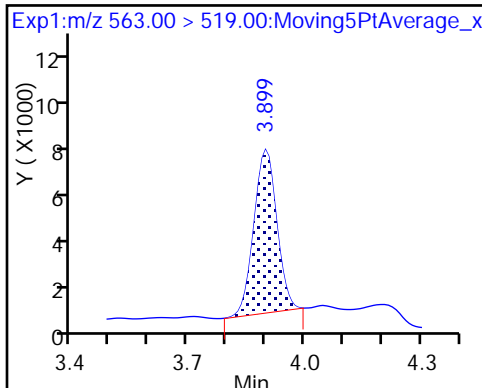
D 30 13C2 PFUnA



31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid D

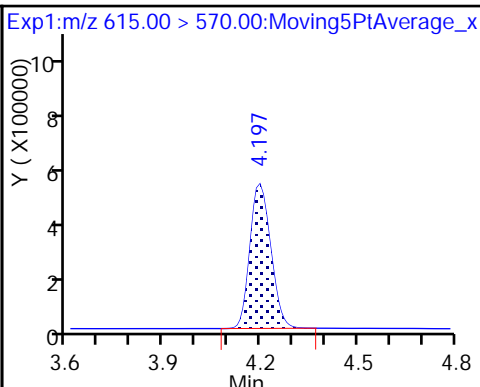
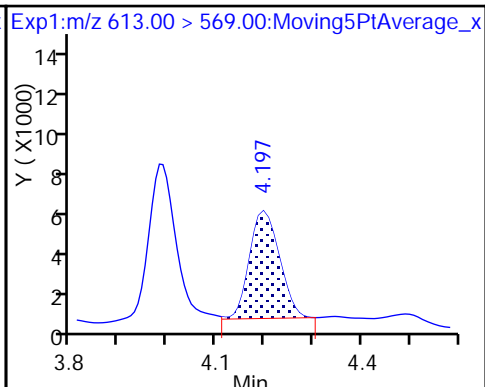
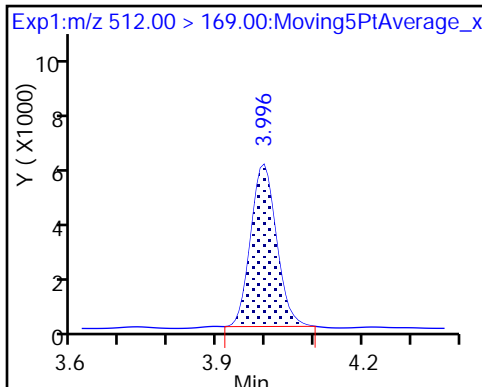
34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

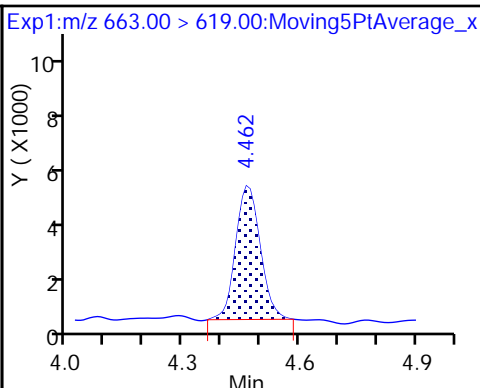
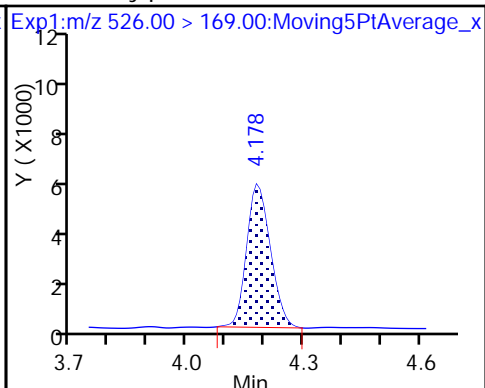
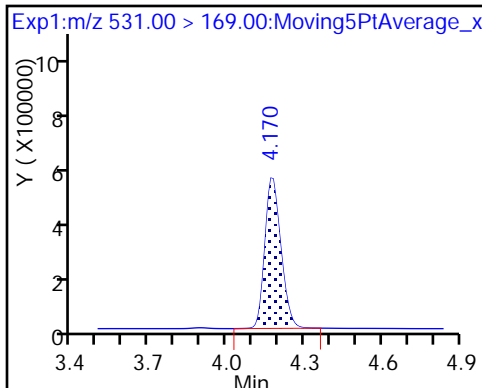
D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

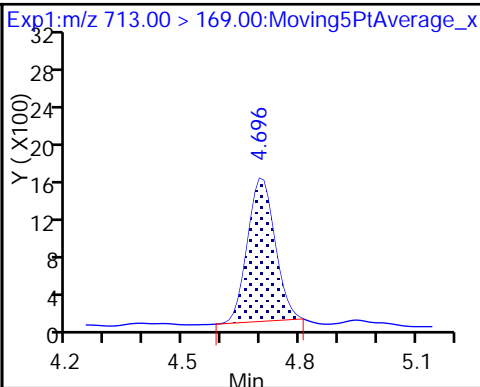
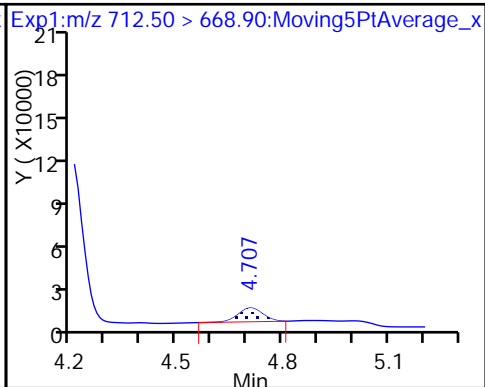
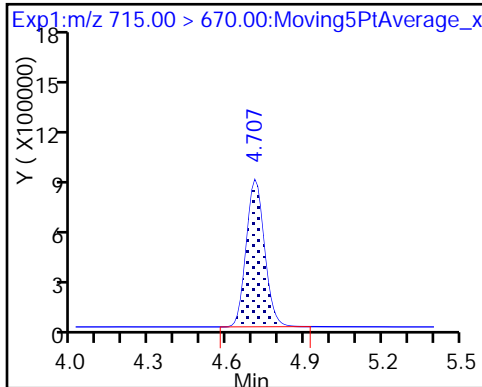
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

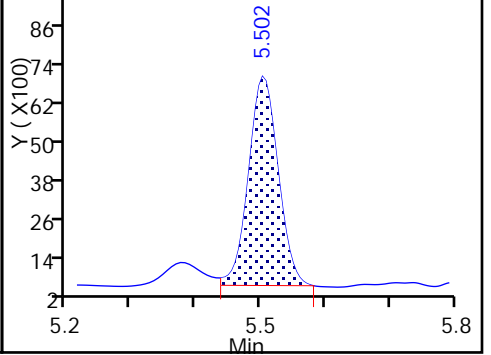
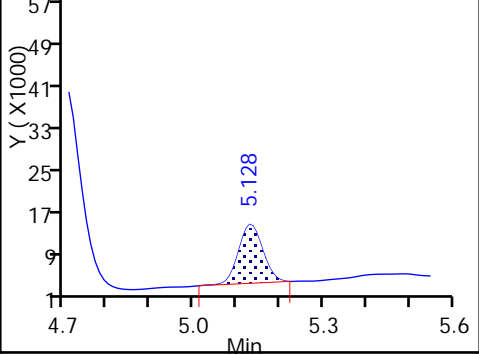
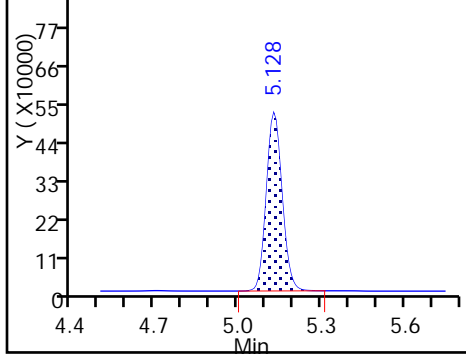
45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid

Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



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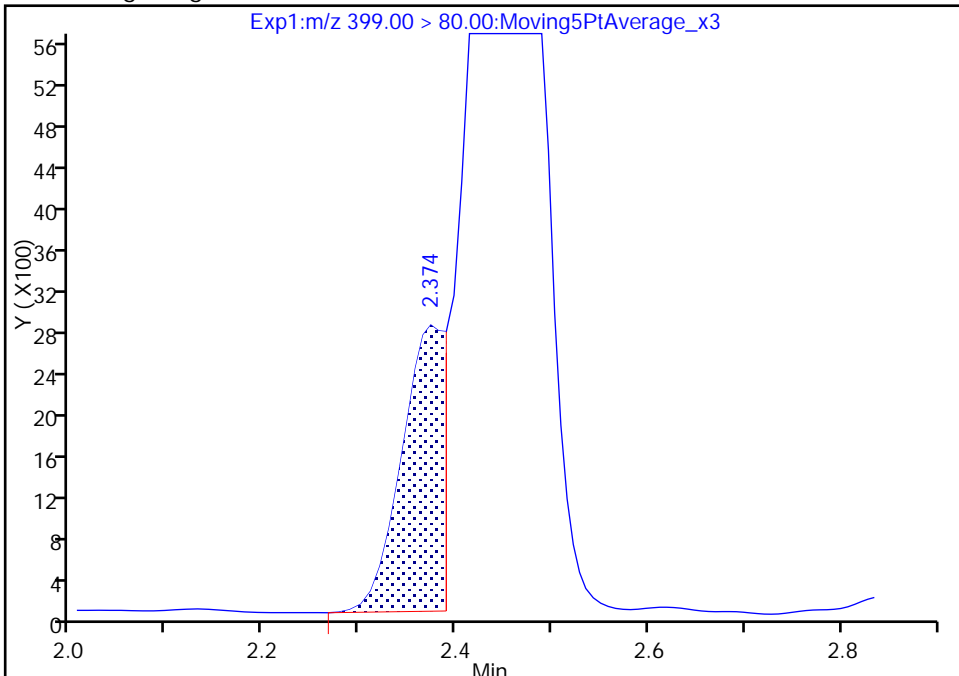
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_003.d
Injection Date: 23-Jul-2017 13:10:08 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

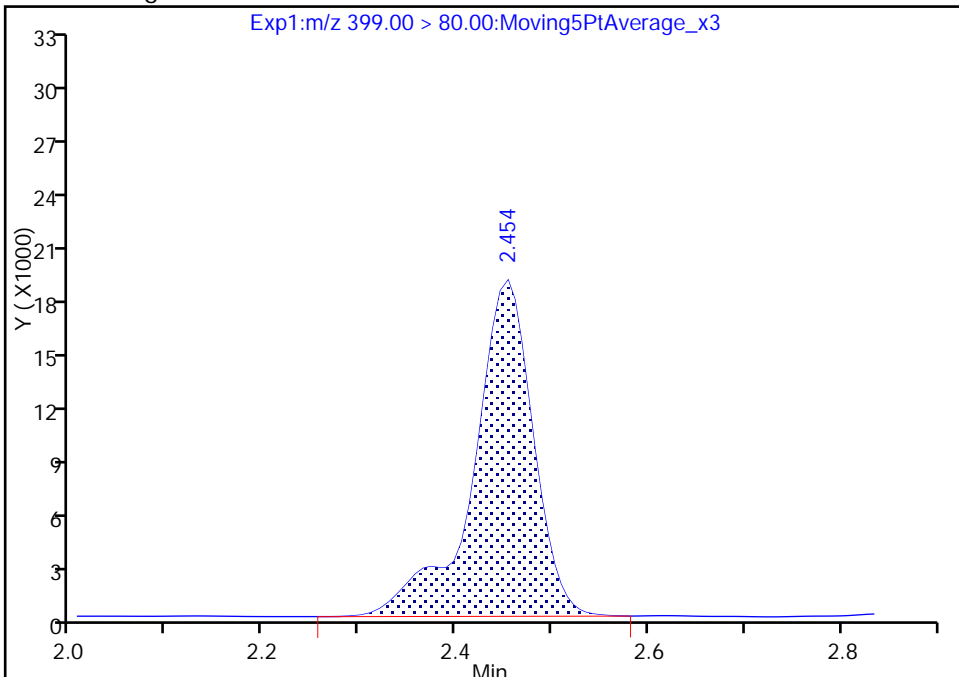
RT: 2.37
Area: 8339
Amount: 0.065370
Amount Units: ng/ml

Processing Integration Results



RT: 2.45
Area: 80894
Amount: 0.563559
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 23-Jul-2017 14:56:42
Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento

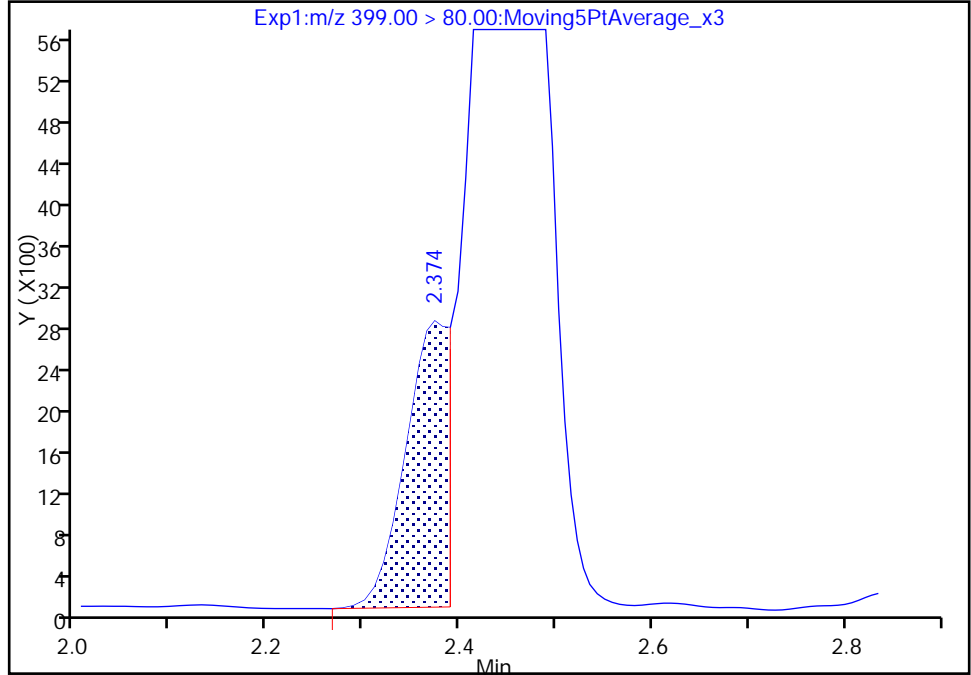
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_003.d
Injection Date: 23-Jul-2017 13:10:08 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

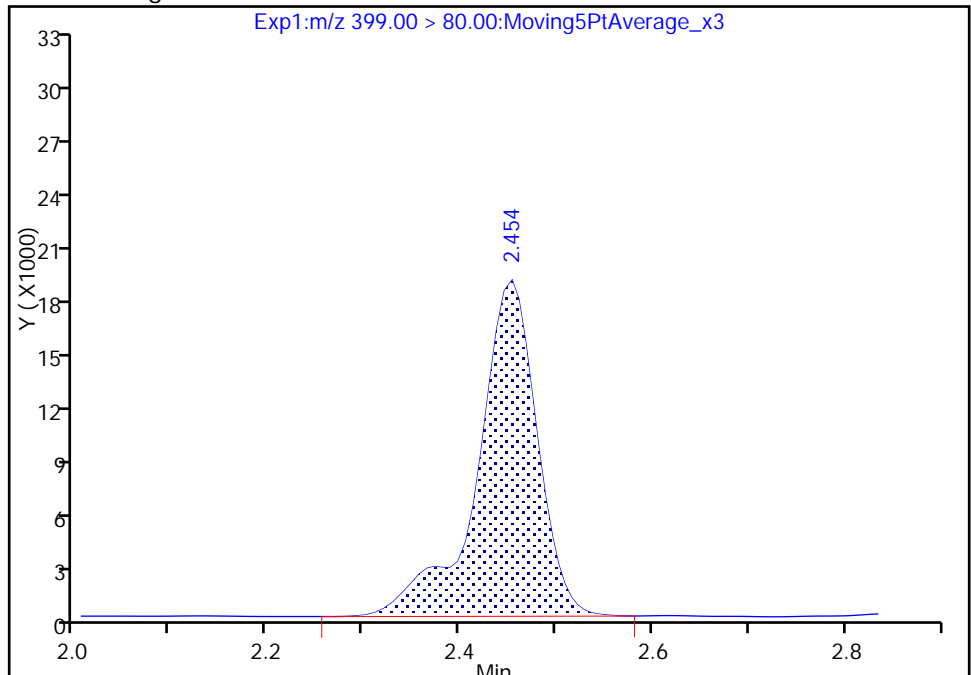
RT: 2.37
Area: 8339
Amount: 0.065370
Amount Units: ng/ml

Processing Integration Results



RT: 2.45
Area: 80894
Amount: 0.563559
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_004.d
 Lims ID: IC L2 Full
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 23-Jul-2017 13:17:02 ALS Bottle#: 29 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 11:24:31 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 14:54:47

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.563 | 1.558 | 0.005 | 8198998 | 52.5 | | 105 | 44099 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.563 | 1.564 | -0.001 | 147752 | 1.02 | | 102 | 80.3 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.782 | 1.780 | 0.002 | 5663549 | 51.3 | | 103 | 82842 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.782 | 1.783 | -0.001 | 119448 | 1.01 | | 101 | 79.9 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.810 | 1.806 | 0.004 | 133834 | NC | | | 5082 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.810 | 1.808 | 0.002 | 192335 | 0.9175 | | 104 | 214 | |
| | 298.90 > 99.00 | 1.810 | 1.808 | 0.002 | 80232 | | 2.40(0.00-0.00) | 104 | 202 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.029 | 2.026 | 0.003 | 42922 | 0.8904 | | 95.3 | 2858 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.074 | 2.070 | 0.004 | 101614 | 1.00 | | 99.9 | 322 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.074 | 2.070 | 0.004 | 5341252 | 52.8 | | 106 | 46134 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.428 | 2.420 | 0.008 | 4345666 | 51.8 | | 104 | 28853 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.428 | 2.420 | 0.008 | 92990 | 1.04 | | 104 | 349 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.444 | 2.436 | 0.008 | 6658501 | 48.4 | | 102 | 32490 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.444 | 2.436 | 0.008 | 148222 | 0.9732 | | 107 | 343 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.798 | 2.740 | 0.058 | 4411799 | 50.0 | | 34925 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.776 | 2.766 | 0.010 | 1.000 | 45441 | 1.02 | 108 | 2064 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.776 | 2.766 | 0.010 | | 2357266 | 49.6 | 104 | 28772 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.805 | 2.793 | 0.012 | | 4393535 | 53.5 | 107 | 29376 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.805 | 2.794 | 0.011 | 1.000 | 88318 | 0.9422 | 94.2 | 21.1 |
| | 413.00 | > 169.00 | 2.805 | 2.794 | 0.011 | 1.000 | 59111 | 1.49(0.90-1.10) | 94.2 | 701 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.812 | 2.801 | 0.011 | 1.000 | 119224 | 0.9587 | 101 | 5409 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.188 | 3.176 | 0.012 | | 5300156 | 49.0 | 102 | 24562 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.188 | 3.176 | 0.012 | 1.000 | 109083 | 0.9306 | 100 | 1796 |
| | 499.00 | > 99.00 | 3.188 | 3.176 | 0.012 | 1.000 | 21100 | 5.17(0.90-1.10) | 100 | 196 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.188 | 3.180 | 0.008 | | 3531702 | 53.7 | 107 | 23345 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.188 | 3.180 | 0.008 | 1.000 | 71952 | 1.00 | 100 | 293 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.509 | 3.505 | 0.004 | | 9352506 | 51.2 | 102 | 10623 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.509 | 3.508 | 0.001 | 1.000 | 162978 | 0.9662 | 96.6 | 3320 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.538 | 3.528 | 0.010 | 1.000 | 32668 | 1.01 | 105 | 1398 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.538 | 3.528 | 0.010 | | 1701481 | 46.6 | 97.3 | 22393 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.548 | 3.539 | 0.009 | | 2960870 | 53.0 | 106 | 7617 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.548 | 3.542 | 0.006 | 1.000 | 57947 | 1.00 | 99.9 | 263 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.707 | 3.698 | 0.009 | | 1049350 | 48.3 | 96.6 | 10009 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.707 | 3.701 | 0.006 | 1.000 | 19166 | 1.00 | 100 | 671 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.857 | 3.855 | 0.002 | 1.000 | 65294 | 0.9460 | 98.1 | 1962 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.875 | 3.866 | 0.009 | | 1132292 | 51.6 | 103 | 3234 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.884 | 3.875 | 0.009 | 1.002 | 18976 | 0.9872 | 98.7 | 570 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.884 | 3.875 | 0.009 | 1.000 | 50978 | 1.02 | 102 | 163 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.884 | 3.875 | 0.009 | | 2210040 | 54.3 | 109 | 11070 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.982 | 3.986 | -0.004 | 2334174 | 49.5 | 99.1 | 819 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.990 | 3.992 | -0.002 | 1.000 | 43069 | 1.00 | 100 | 1657 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.181 | 4.168 | 0.013 | 1.000 | 38911 | 0.8719 | 87.2 | 12.3 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.181 | 4.169 | 0.012 | | 2401406 | 53.8 | 108 | 5839 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.172 | 4.173 | -0.001 | | 2393195 | 49.0 | 98.0 | 5695 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.172 | 4.178 | -0.006 | 1.000 | 43208 | 0.9734 | 97.3 | 1710 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.446 | 4.434 | 0.012 | 1.000 | 38455 | 0.9404 | 94.0 | 13.5 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.691 | 4.676 | 0.015 | 1.000 | 108795 | 1.18 | 118 | 9.7 |
| | 713.00 | > 169.00 | 4.681 | 4.676 | 0.005 | 0.998 | 12111 | 8.98(0.00-0.00) | 118 | 216 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.691 | 4.676 | 0.015 | | 4366113 | 53.8 | 108 | 18079 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.108 | 5.091 | 0.017 | | 2129628 | 51.6 | 103 | 6594 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.108 | 5.092 | 0.016 | 1.000 | 63261 | 1.00 | 99.8 | 13.9 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.480 | 5.458 | 0.022 | 1.000 | 32872 | 0.8944 | 89.4 | 17.2 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L2_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_004.d

Injection Date: 23-Jul-2017 13:17:02

Instrument ID: A8_N

Lims ID: IC L2 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

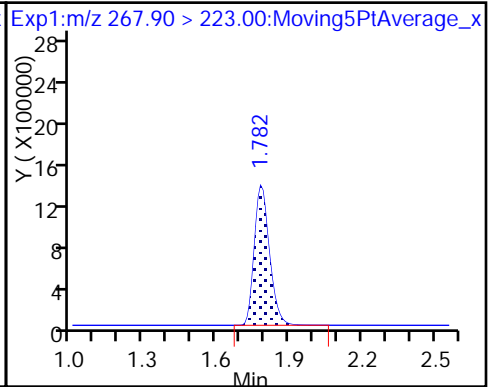
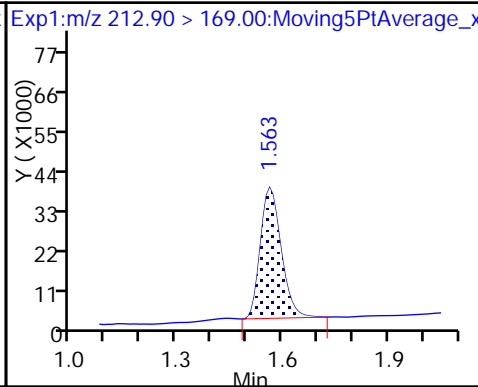
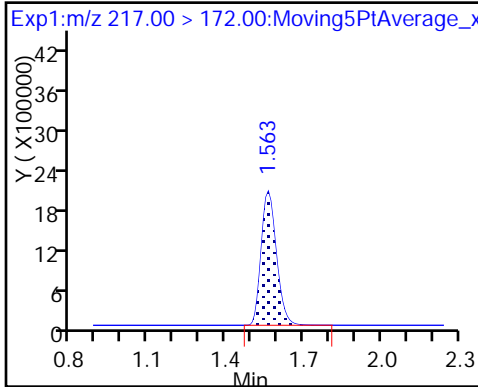
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

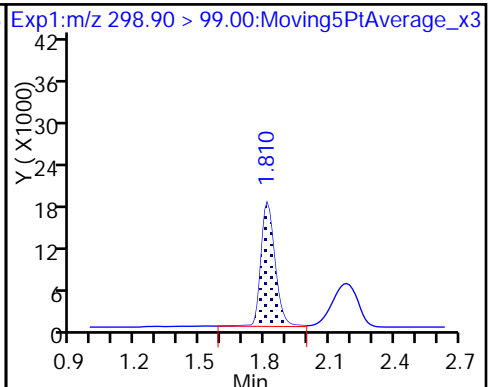
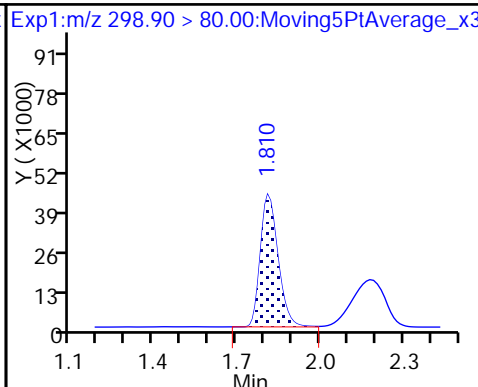
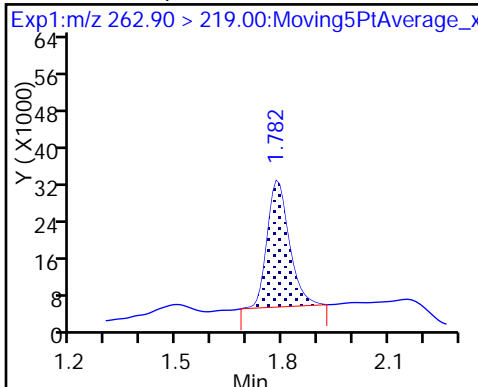
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

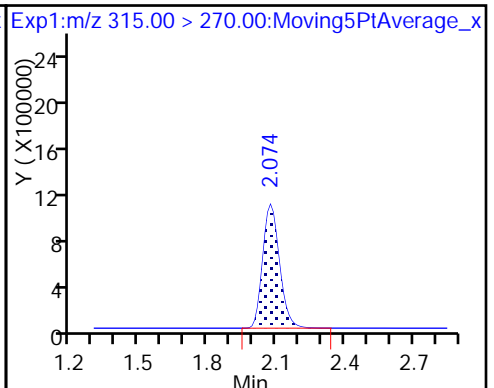
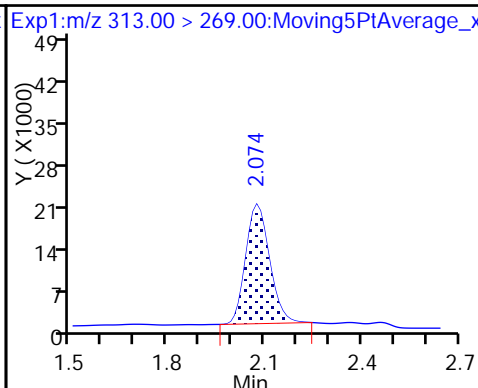
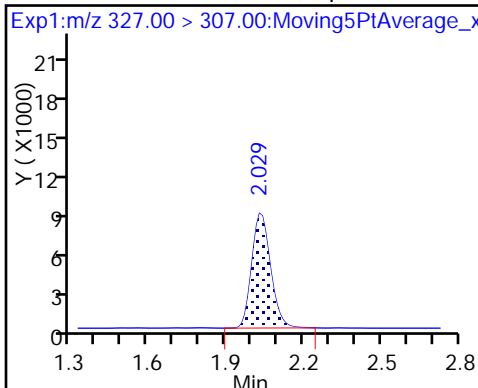
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

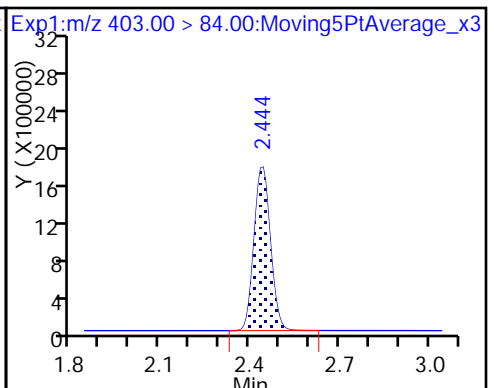
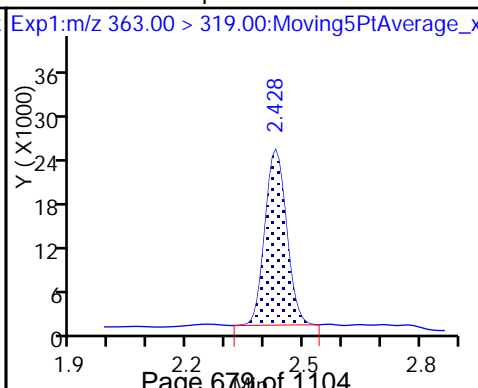
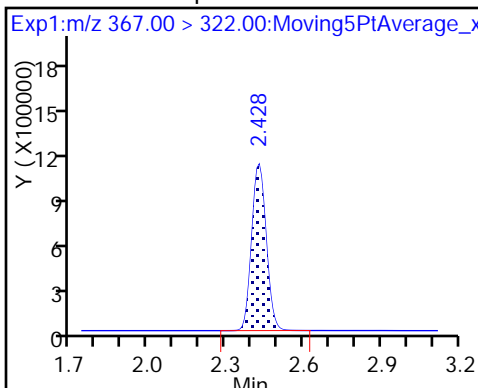
D 7 13C2 PFHxA



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

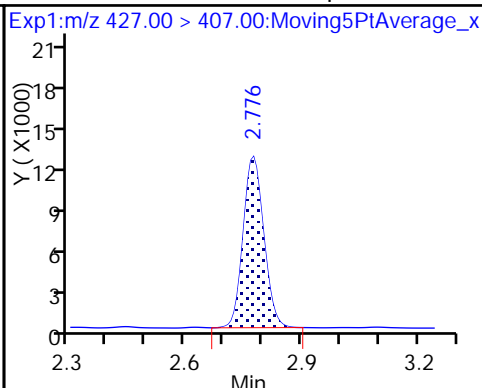
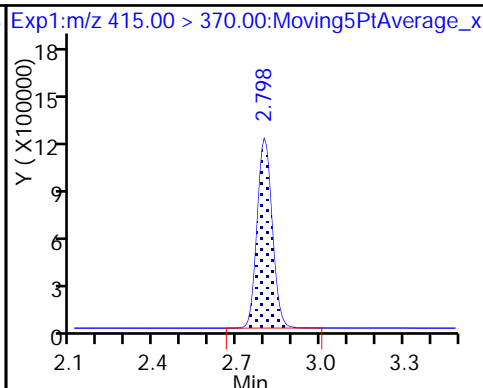
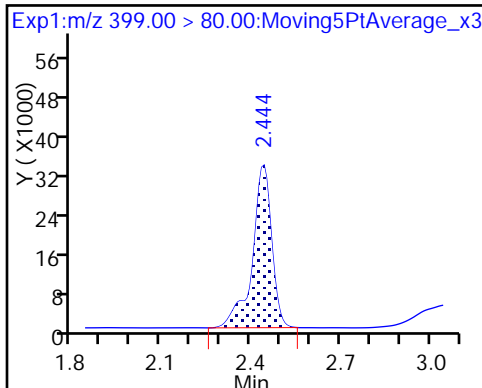
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

* 62 13C2-PFOA

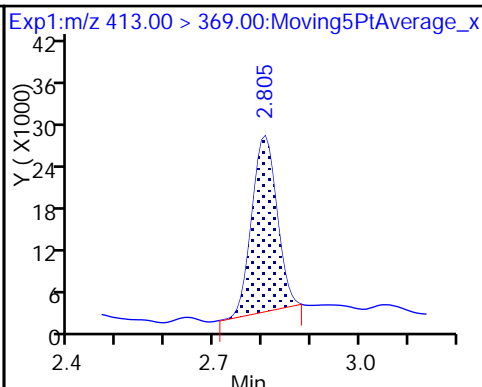
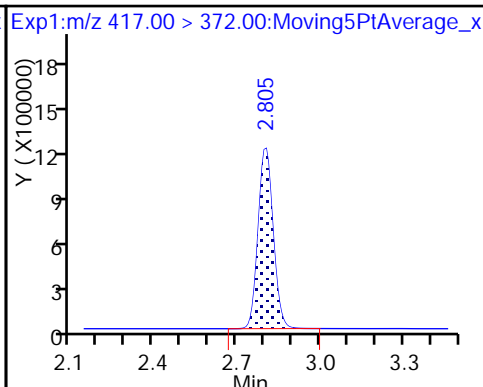
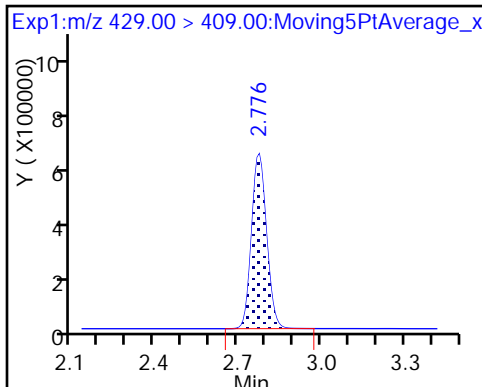
13 Sodium 1H,1H,2H,2H-perfluorooctane



D 12 M2-6:2FTS

D 14 13C4 PFOA

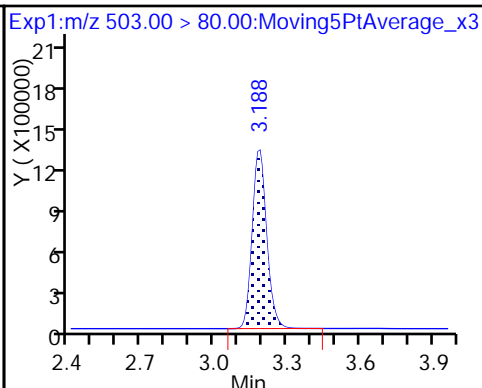
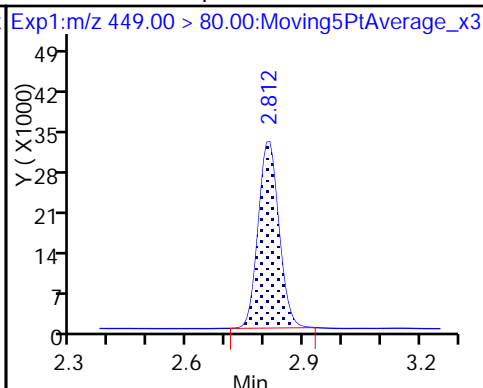
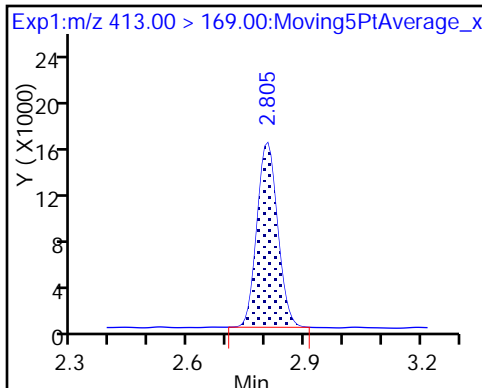
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

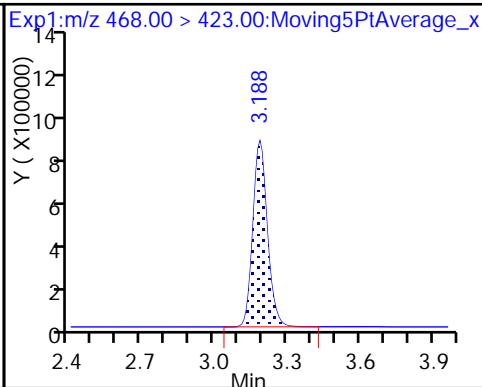
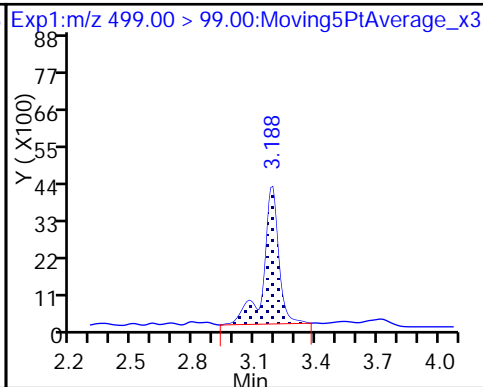
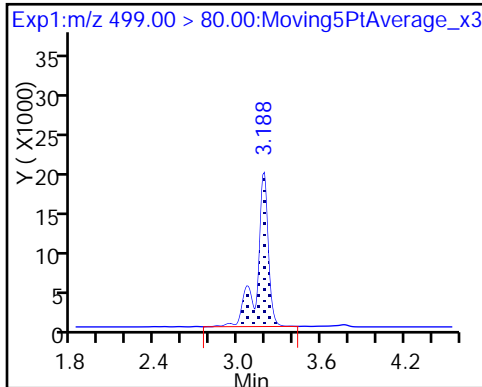
D 18 13C4 PFOS

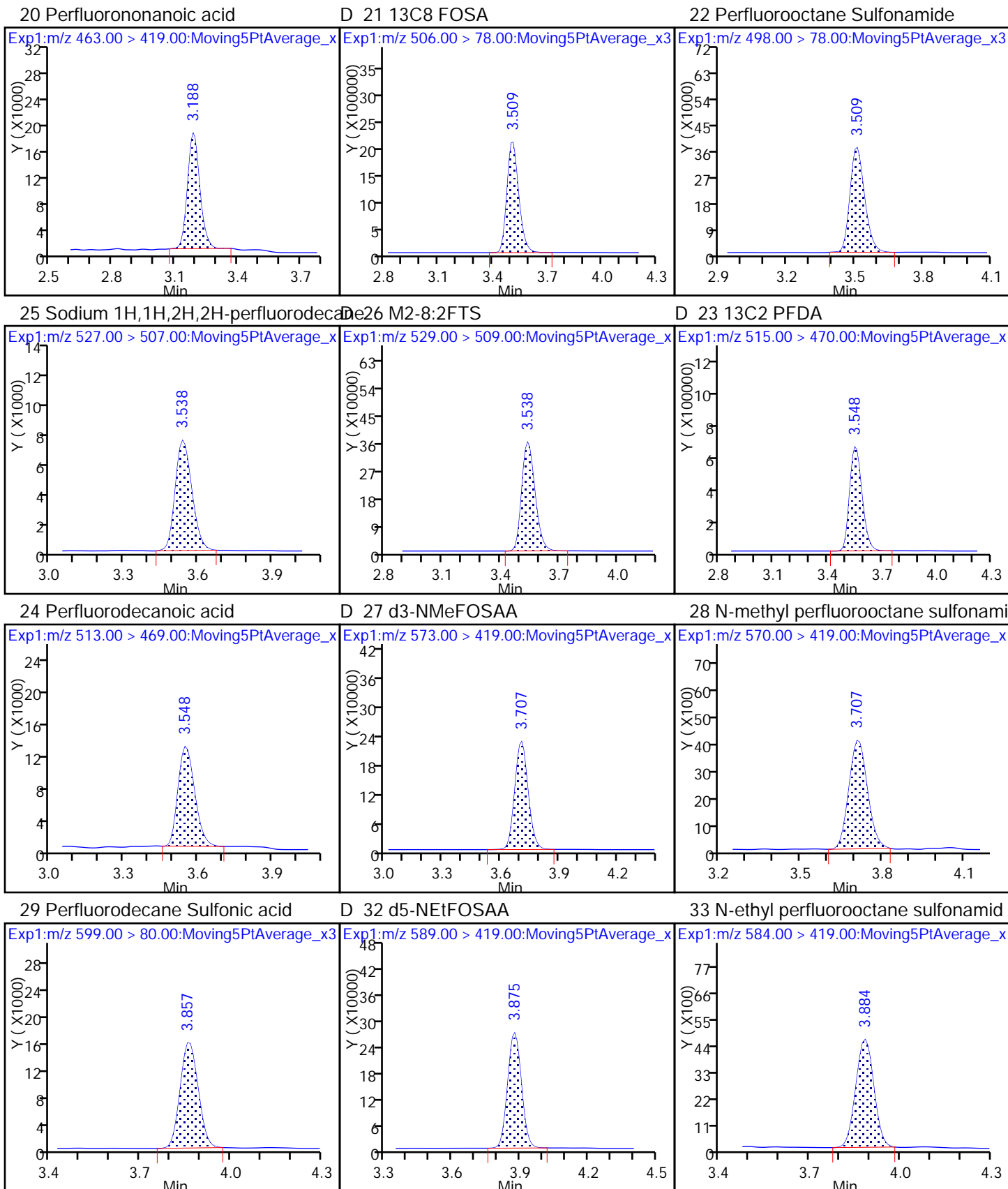


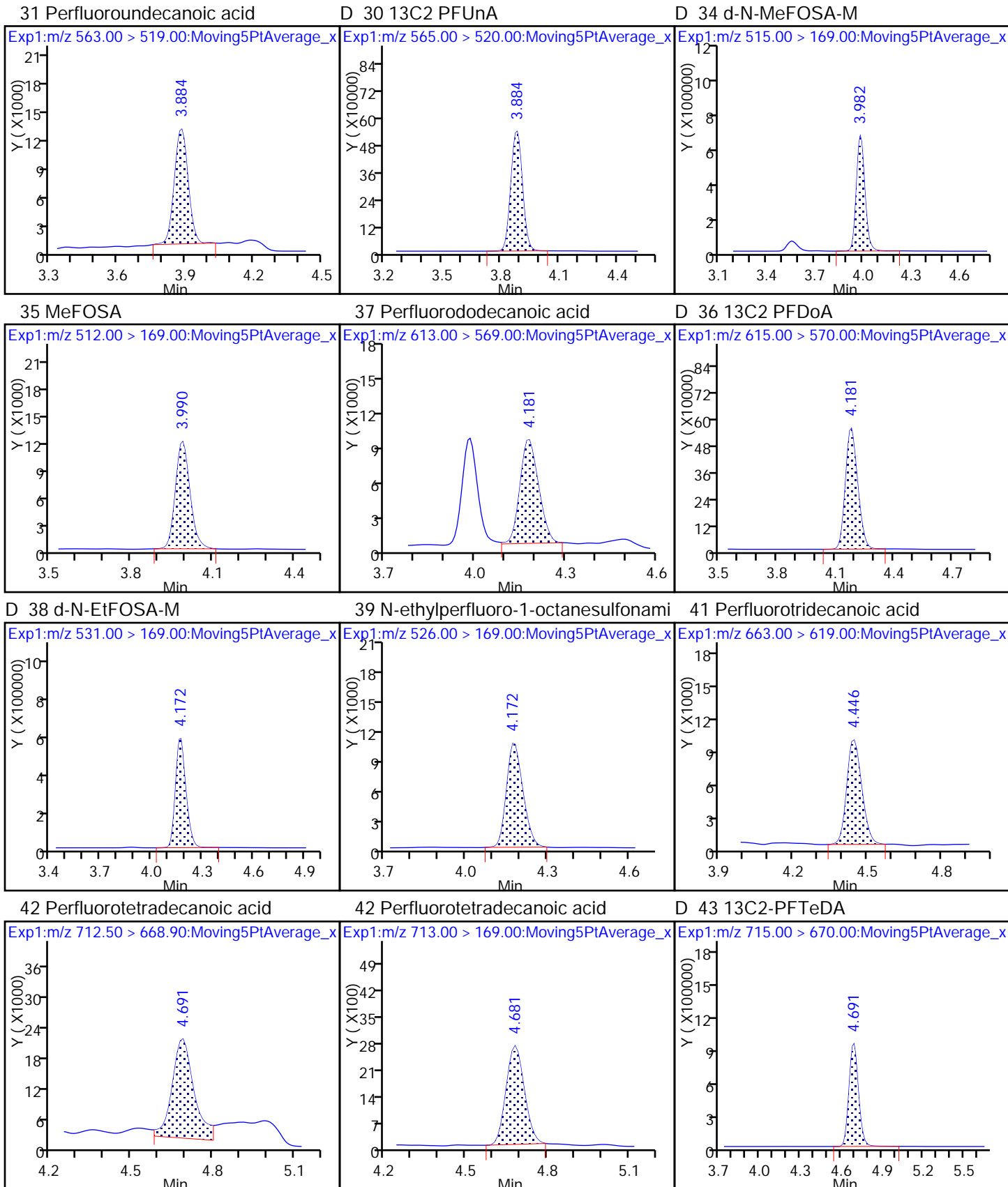
17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA



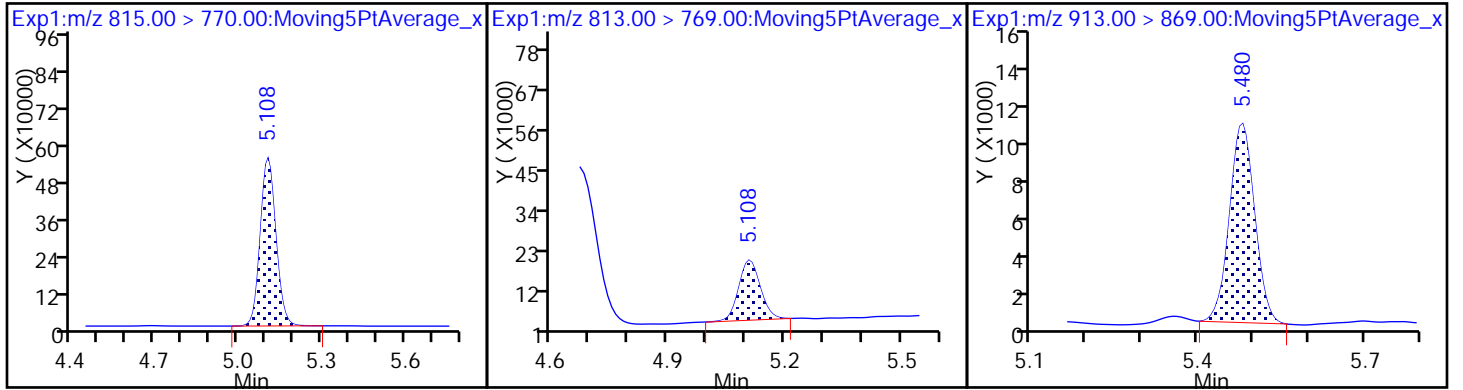




D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

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 Lims ID: IC L3 Full
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 23-Jul-2017 13:23:55 ALS Bottle#: 30 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 11:24:35 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 14:56:08

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.563 | 1.558 | 0.005 | 7724731 | 49.5 | | 99.0 | 47248 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.563 | 1.564 | -0.001 | 749523 | 5.50 | | 110 | 432 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.782 | 1.780 | 0.002 | 5745028 | 52.0 | | 104 | 79763 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.782 | 1.783 | -0.001 | 596471 | 4.98 | | 99.6 | 407 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.809 | 1.806 | 0.003 | 138064 | NC | | | 6289 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.809 | 1.808 | 0.001 | 990268 | 4.79 | | 108 | 667 | |
| | 298.90 > 99.00 | 1.809 | 1.808 | 0.001 | 394074 | | 2.51(0.00-0.00) | 108 | 628 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.029 | 2.026 | 0.003 | 227509 | 4.99 | | 107 | 15208 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.074 | 2.070 | 0.004 | 5205527 | 51.5 | | 103 | 46740 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.074 | 2.070 | 0.004 | 510606 | 5.15 | | 103 | 1794 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.421 | 2.420 | 0.001 | 453995 | 4.91 | | 98.2 | 1739 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.421 | 2.420 | 0.001 | 4502179 | 53.7 | | 107 | 34286 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.437 | 2.436 | 0.001 | 662781 | 4.41 | | 96.9 | 1275 | M |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.437 | 2.436 | 0.001 | 6569473 | 47.8 | | 101 | 43521 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.790 | 2.740 | 0.050 | 4054382 | 50.0 | | 28615 | |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.769 | 2.766 | 0.002 | 2227990 | 46.8 | | 98.6 | 29995 |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.769 | 2.766 | 0.002 | 1.000 | 208291 | 4.96 | 105 | 7911 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.797 | 2.793 | 0.004 | 4232863 | 51.5 | | 103 | 33237 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.797 | 2.794 | 0.003 | 1.000 | 454115 | 5.03 | 101 | 108 |
| | 413.00 | > 169.00 | 2.797 | 2.794 | 0.003 | 1.000 | 270696 | 1.68(0.90-1.10) | 101 | 3023 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.805 | 2.801 | 0.004 | 1.000 | 604887 | 4.98 | 105 | 16599 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.179 | 3.176 | 0.003 | 1.000 | 547466 | 4.78 | 103 | 6062 |
| | 499.00 | > 99.00 | 3.179 | 3.176 | 0.003 | 1.000 | 114193 | 4.79(0.90-1.10) | 103 | 1293 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.179 | 3.176 | 0.003 | 5180018 | 47.9 | | 100 | 22902 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.187 | 3.180 | 0.006 | 1.000 | 368688 | 5.19 | 104 | 1497 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.187 | 3.180 | 0.006 | 3490997 | 53.1 | | 106 | 20823 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.508 | 3.505 | 0.003 | 9138842 | 50.0 | | 100.0 | 13023 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.508 | 3.508 | 0.0 | 1.000 | 875387 | 5.31 | 106 | 10808 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.537 | 3.528 | 0.009 | 1748653 | 47.9 | | 100 | 21934 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.537 | 3.528 | 0.009 | 1.000 | 169963 | 5.11 | 107 | 7267 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.547 | 3.539 | 0.008 | 2973174 | 53.2 | | 106 | 9392 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.547 | 3.542 | 0.005 | 1.000 | 289035 | 4.96 | 99.2 | 1493 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.706 | 3.698 | 0.008 | 1090209 | 50.2 | | 100 | 11508 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.706 | 3.701 | 0.005 | 1.000 | 97239 | 4.90 | 98.0 | 4106 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.865 | 3.855 | 0.010 | 1.000 | 335448 | 4.97 | 103 | 7995 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.874 | 3.866 | 0.008 | 1136911 | 51.8 | | 104 | 3534 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.882 | 3.875 | 0.007 | 2159853 | 53.0 | | 106 | 11782 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.882 | 3.875 | 0.007 | 1.000 | 233311 | 5.16 | 103 | 737 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.882 | 3.875 | 0.007 | 1.002 | 97401 | 5.05 | 101 | 2315 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.989 | 3.986 | 0.003 | | 2296036 | 48.7 | 97.5 | 790 | |
| 35 MeFOSA | 512.00 > 169.00 | 3.996 | 3.992 | 0.004 | 1.000 | 214053 | 5.08 | 102 | 3821 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.178 | 4.168 | 0.010 | 1.000 | 212214 | 5.03 | 101 | 59.0 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.178 | 4.169 | 0.009 | | 2268225 | 50.8 | 102 | 6089 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.178 | 4.173 | 0.005 | | 2400939 | 49.2 | 98.3 | 5607 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.186 | 4.178 | 0.008 | 1.000 | 221116 | 4.97 | 99.3 | 3666 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.443 | 4.434 | 0.009 | 1.000 | 201160 | 5.21 | 104 | 71.2 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.689 | 4.676 | 0.013 | | 4237183 | 52.2 | 104 | 19971 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.689 | 4.676 | 0.013 | 1.000 | 468872 | 5.38 | 108 | 40.8 | |
| | 713.00 > 169.00 | 4.679 | 4.676 | 0.003 | 0.998 | 51226 | | 9.15(0.00-0.00) | 108 | 969 |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.106 | 5.091 | 0.015 | | 2088906 | 50.6 | 101 | 4403 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.106 | 5.092 | 0.014 | 1.000 | 206894 | 5.09 | 102 | 45.8 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.469 | 5.458 | 0.011 | 1.000 | 167649 | 4.83 | 96.6 | 75.6 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L3_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_005.d

Injection Date: 23-Jul-2017 13:23:55

Instrument ID: A8_N

Lims ID: IC L3 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 30

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

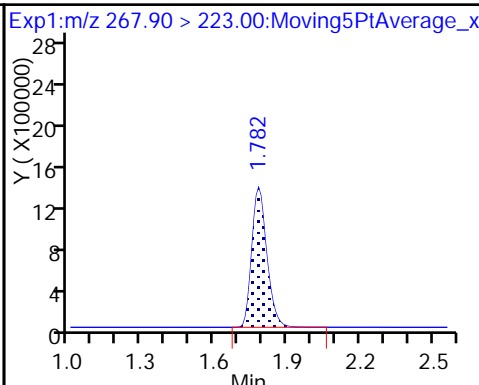
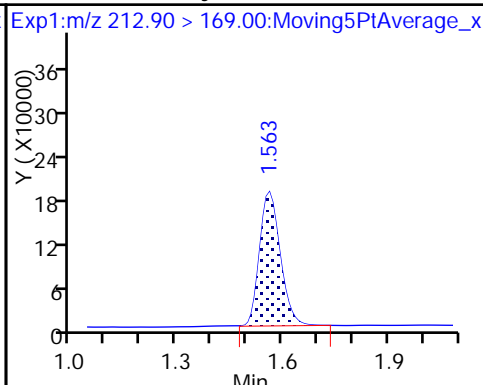
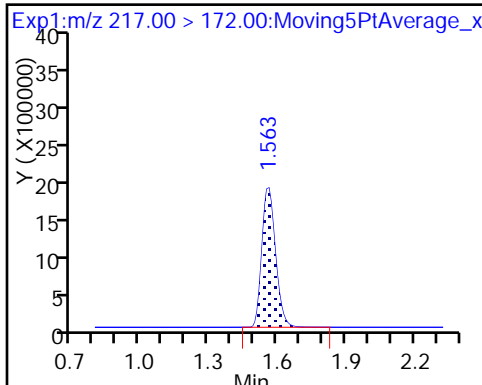
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

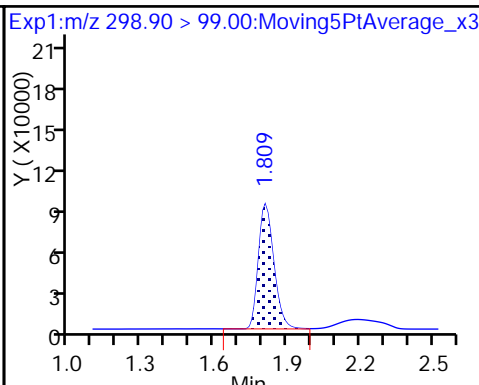
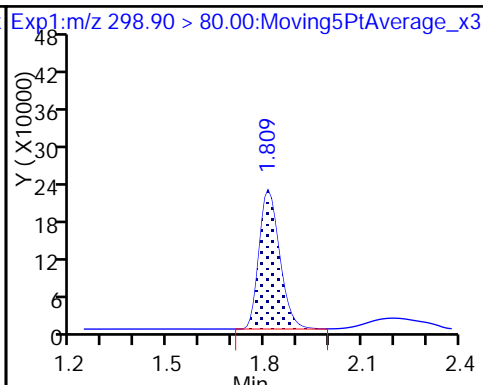
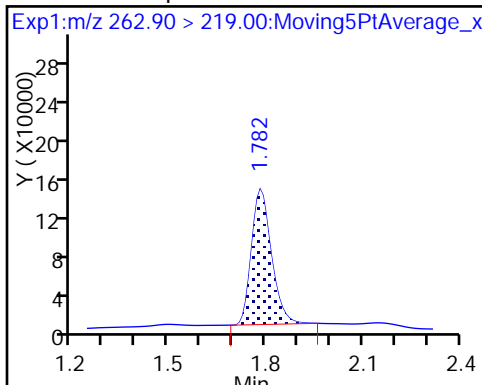
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

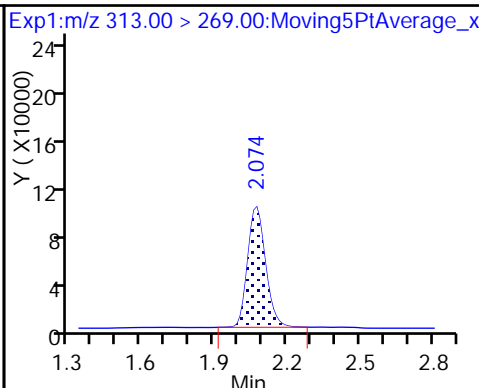
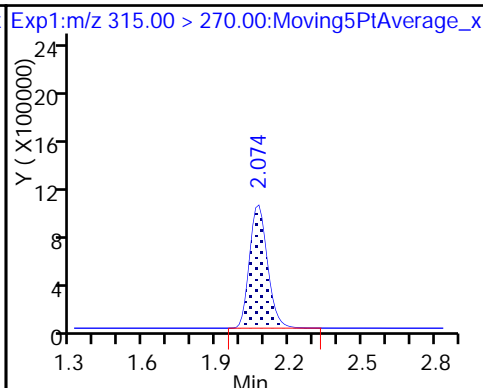
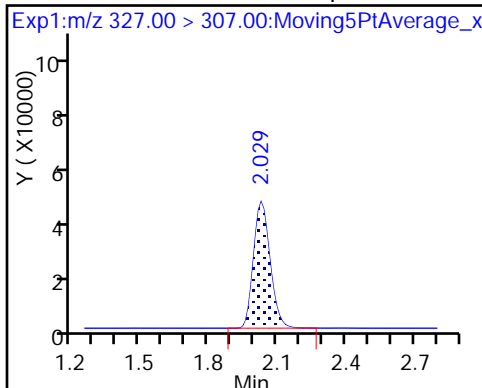
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

De 7 13C2 PFHxA

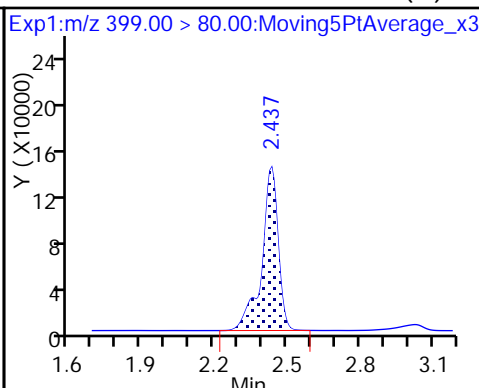
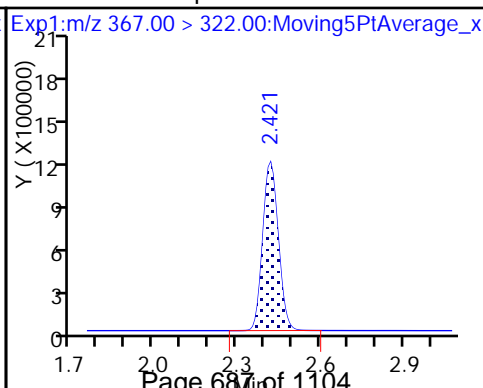
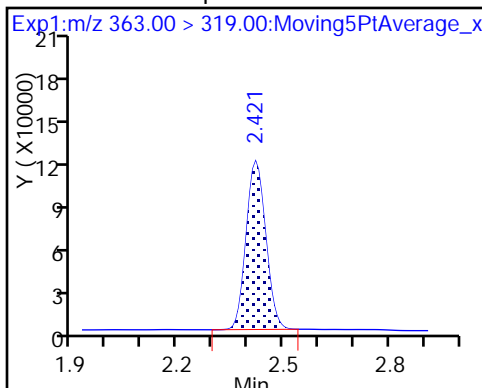
6 Perfluorohexanoic acid



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

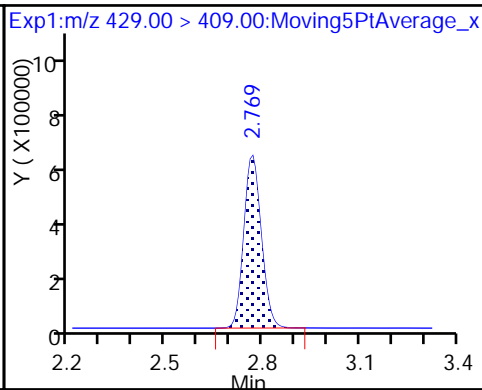
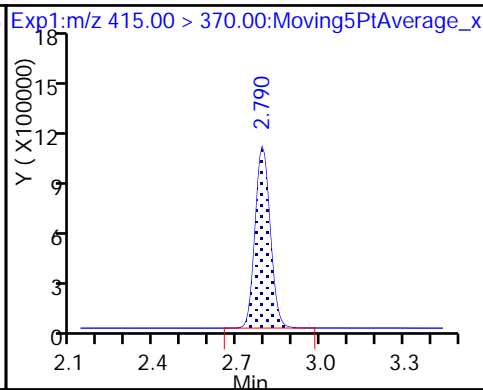
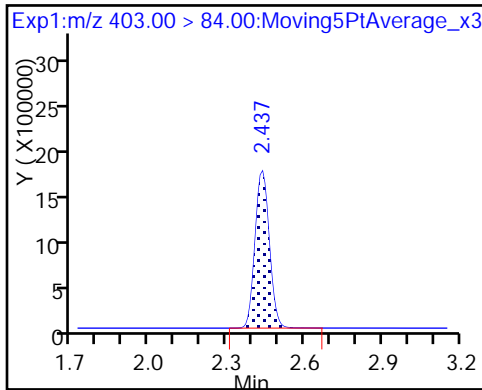
8 Perfluorohexanesulfonic acid (M)



D 11 18O2 PFHxS

* 62 13C2-PFOA

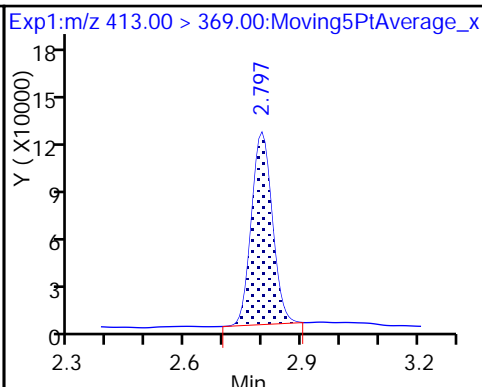
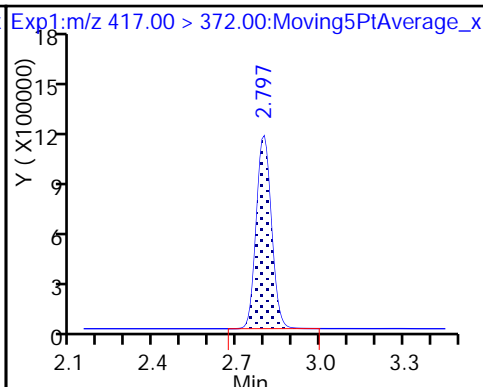
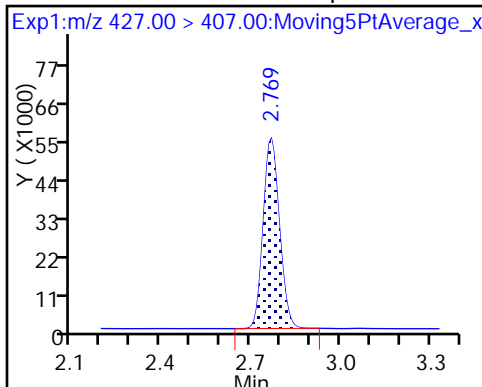
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctadecanoic acid

D 14 13C4 PFOA

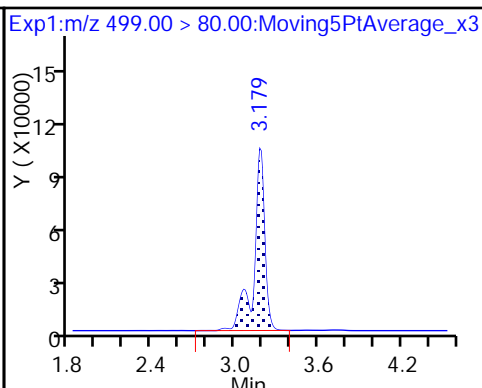
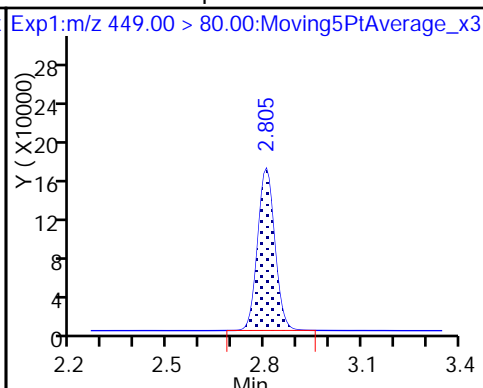
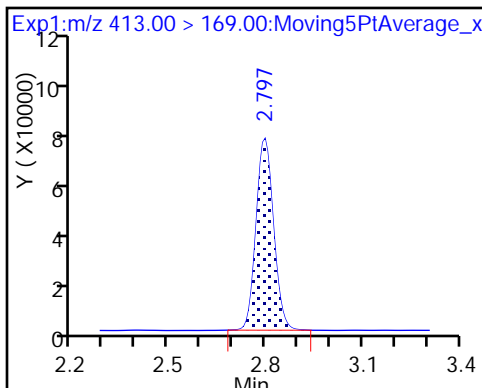
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

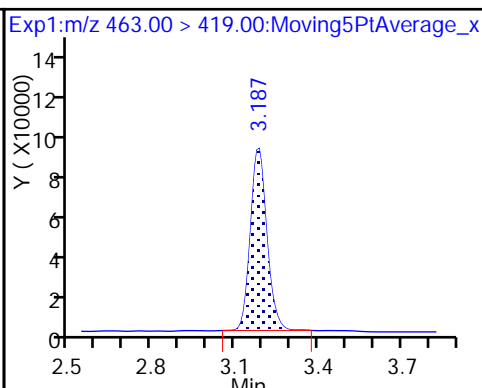
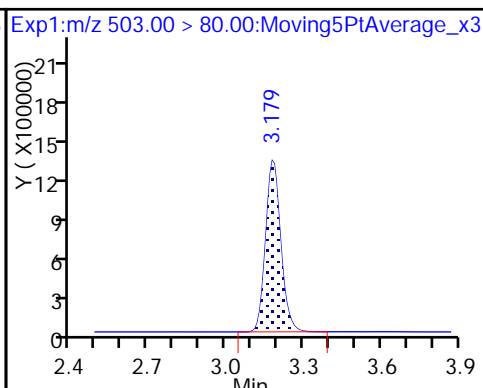
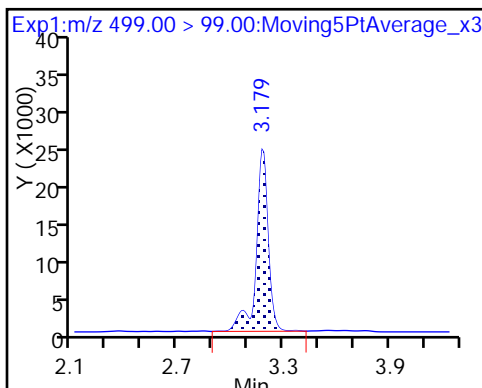
17 Perfluorooctane sulfonic acid



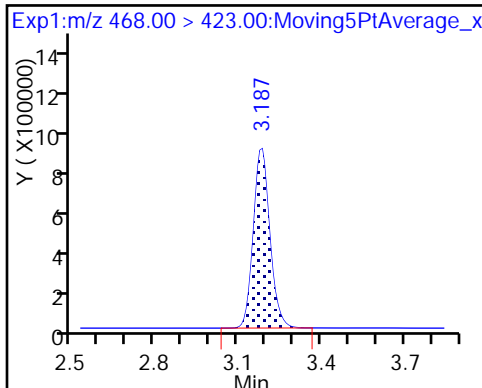
17 Perfluorooctane sulfonic acid

D 18 13C4 PFOS

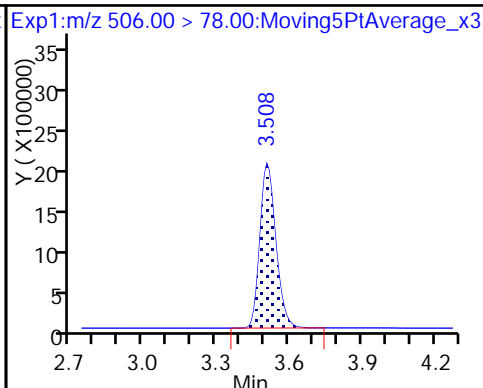
20 Perfluorononanoic acid



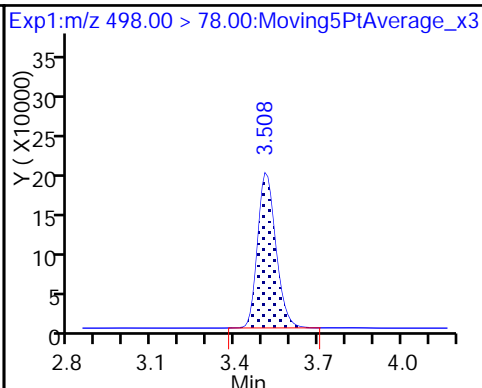
D 19 13C5 PFNA



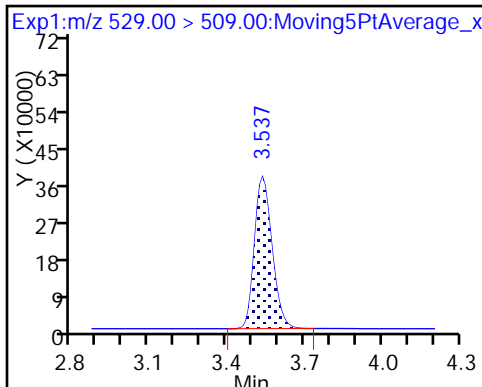
D 21 13C8 FOSA



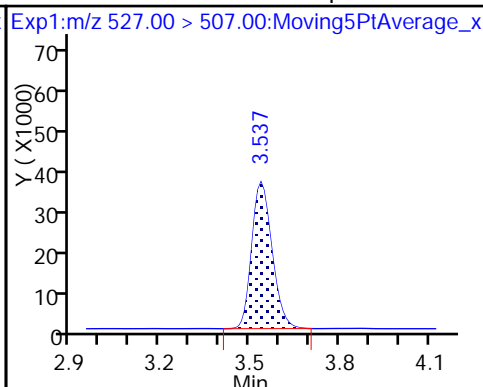
22 Perfluorooctane Sulfonamide



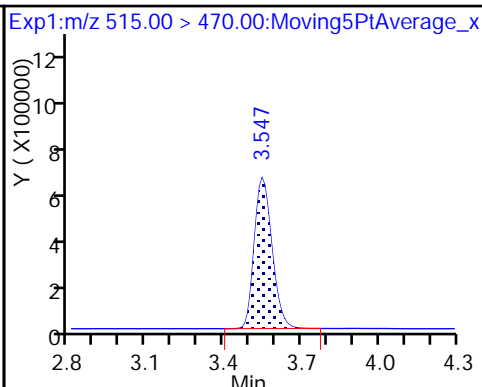
D 26 M2-8:2FTS



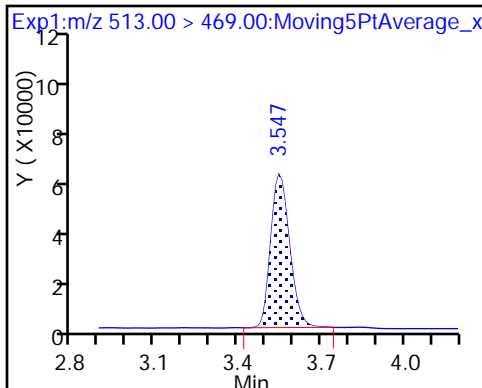
25 Sodium 1H,1H,2H,2H-perfluorodeca



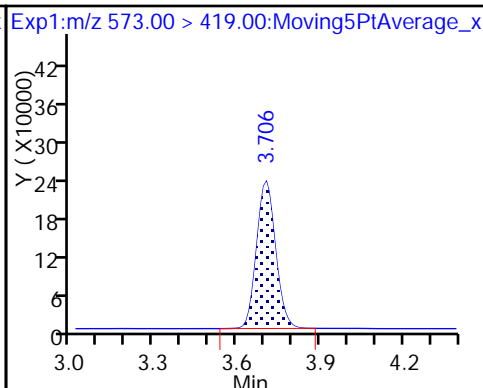
De23 13C2 PFDA



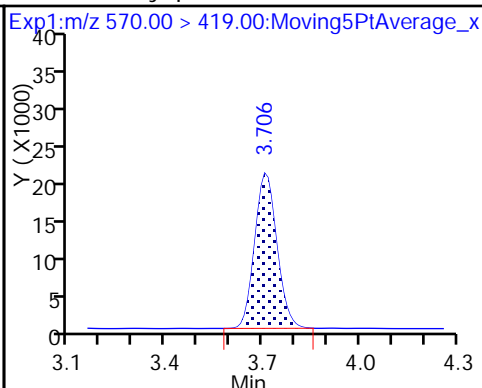
24 Perfluorodecanoic acid



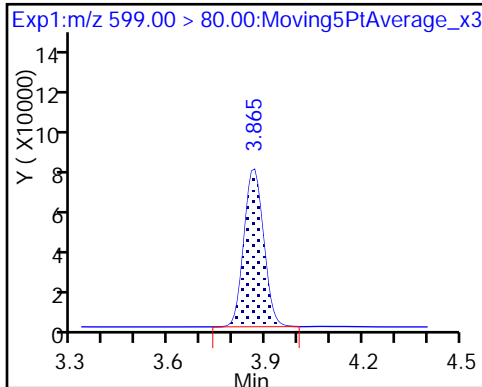
D 27 d3-NMeFOSAA



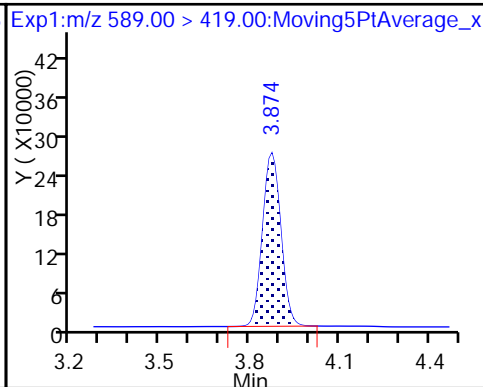
28 N-methyl perfluorooctane sulfonami



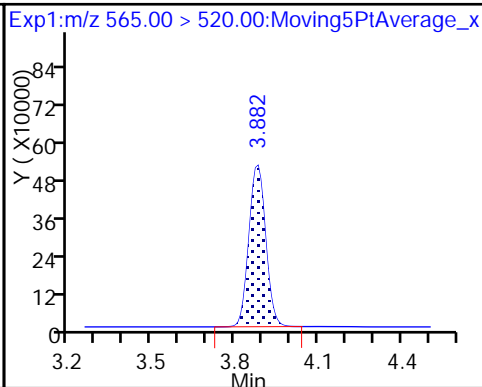
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA



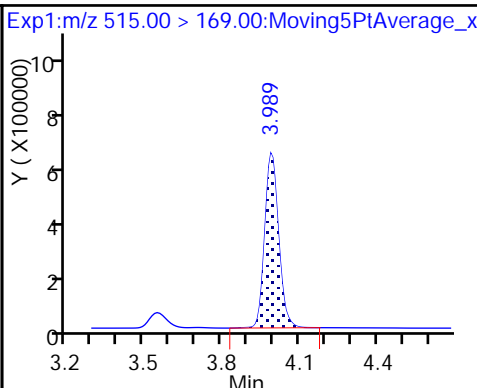
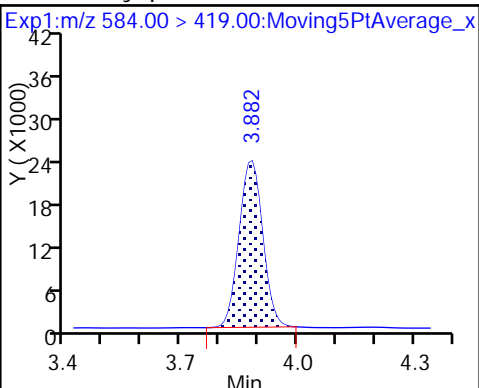
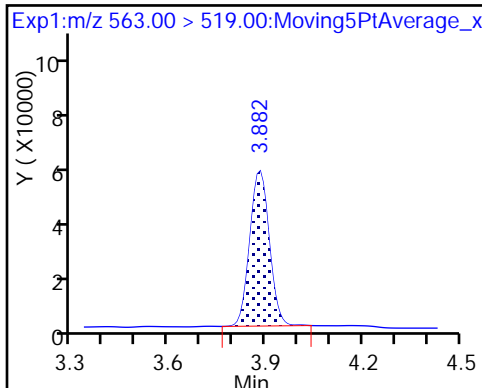
D 30 13C2 PFUnA



31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid D

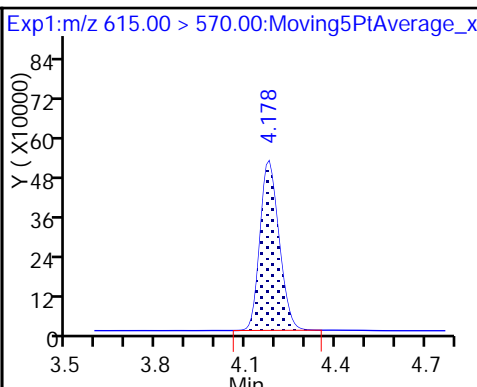
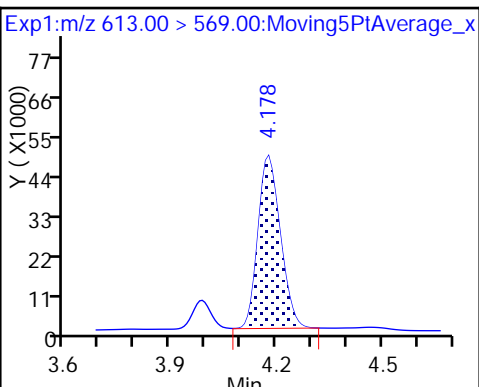
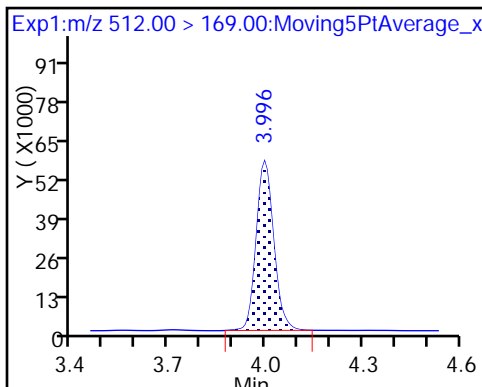
34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

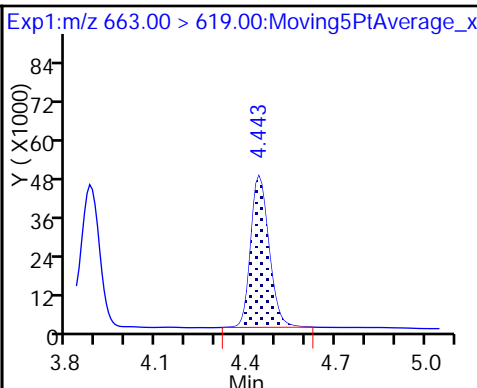
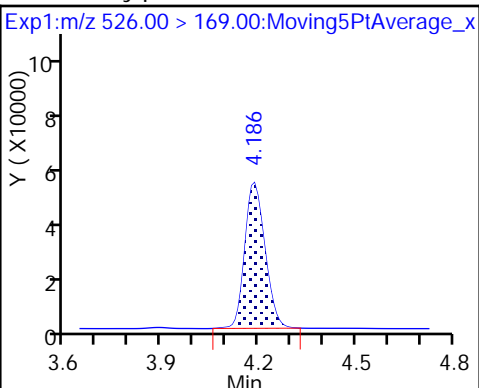
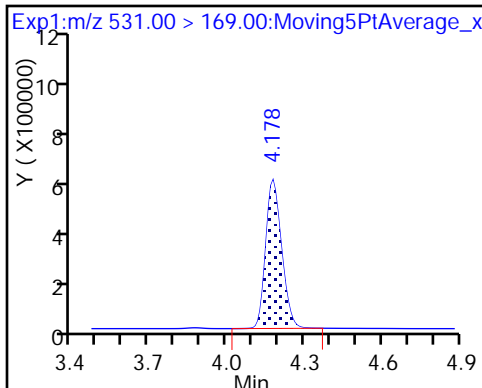
D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

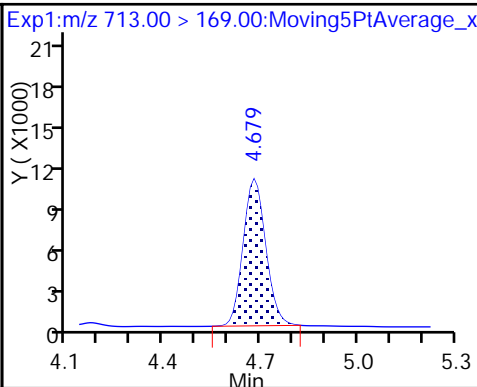
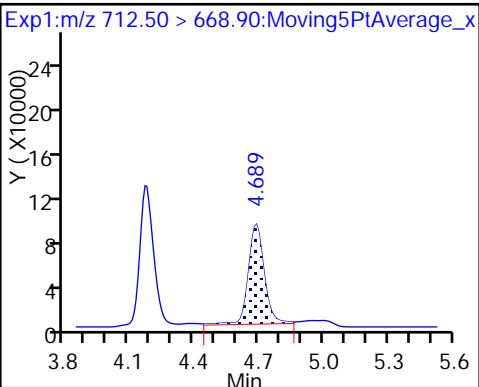
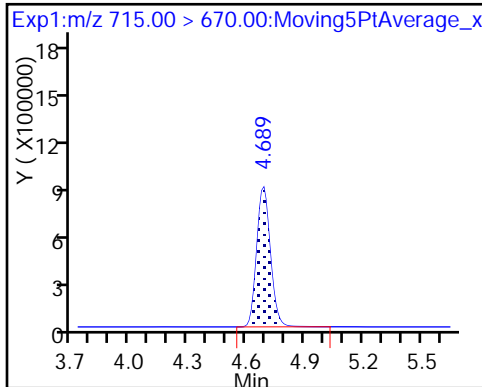
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

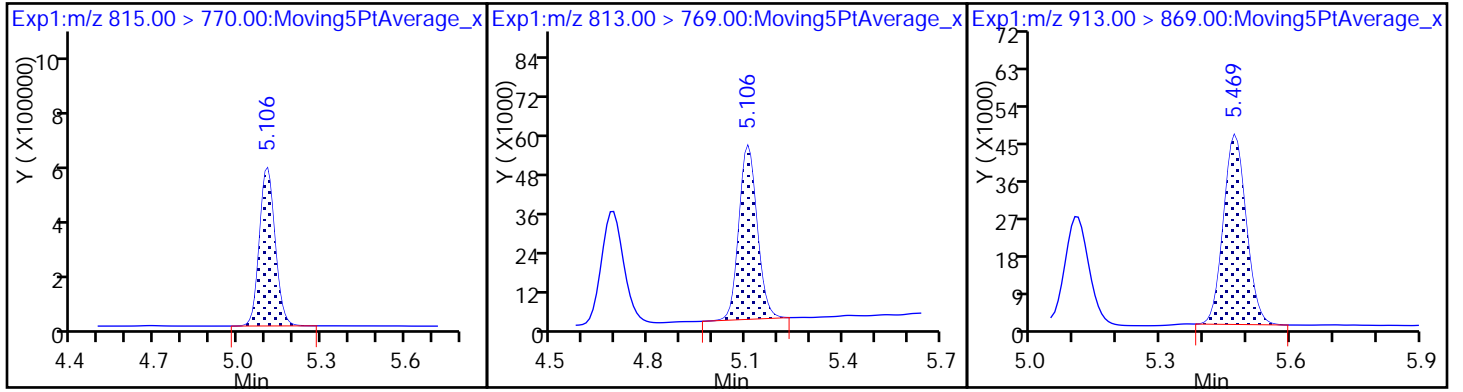
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento

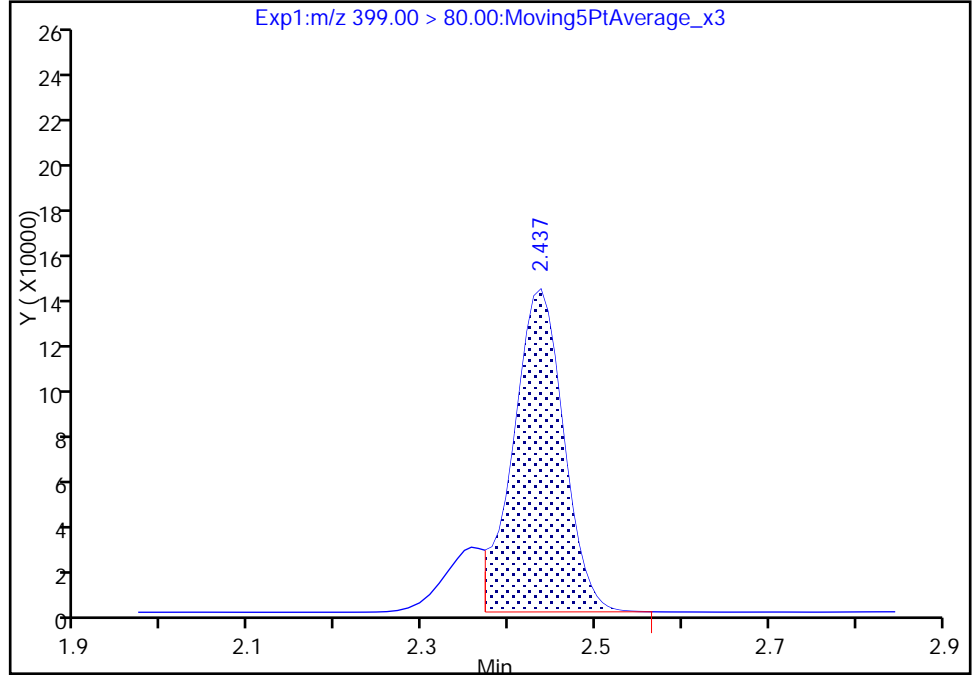
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_005.d
Injection Date: 23-Jul-2017 13:23:55 Instrument ID: A8_N
Lims ID: IC L3 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

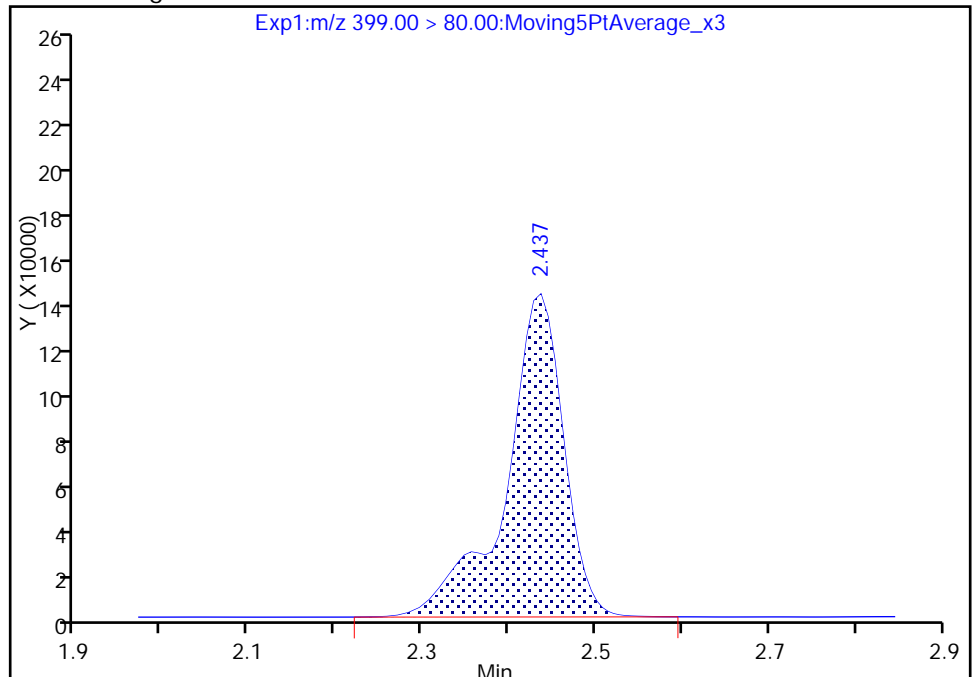
RT: 2.44
Area: 571028
Amount: 4.276064
Amount Units: ng/ml

Processing Integration Results



RT: 2.44
Area: 662781
Amount: 4.410791
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 23-Jul-2017 15:01:56
Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_006.d
 Lims ID: IC L4 Full
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 23-Jul-2017 13:30:50 ALS Bottle#: 31 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 11:24:39 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 15:03:02

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.554 | 1.558 | -0.004 | 8240620 | 52.8 | | 106 | 47805 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.554 | 1.564 | -0.010 | 3038741 | 20.9 | | 105 | 1790 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.773 | 1.780 | -0.007 | 5749559 | 52.0 | | 104 | 75658 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.773 | 1.783 | -0.010 | 2299701 | 19.2 | | 96.0 | 1590 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.801 | 1.806 | -0.005 | 136675 | NC | | | 5272 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.801 | 1.808 | -0.007 | 3988481 | 18.9 | | 107 | 2591 | |
| | 298.90 > 99.00 | 1.801 | 1.808 | -0.007 | 1530271 | | 2.61(0.00-0.00) | 107 | 2364 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.018 | 2.026 | -0.008 | 865853 | 18.2 | | 97.5 | 43007 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.063 | 2.070 | -0.007 | 1995591 | 19.9 | | 99.6 | 6853 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.063 | 2.070 | -0.007 | 5262198 | 52.0 | | 104 | 45723 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.416 | 2.420 | -0.004 | 4306431 | 51.4 | | 103 | 34222 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.416 | 2.420 | -0.004 | 1717995 | 19.4 | | 97.2 | 7202 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.432 | 2.436 | -0.004 | 6720545 | 48.9 | | 103 | 35152 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.432 | 2.436 | -0.004 | 2654948 | 17.3 | | 94.9 | 2425 | M |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags | |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|-------|------|
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.785 | 2.740 | 0.045 | 4540955 | 50.0 | | 40389 | | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.764 | 2.766 | -0.002 | 1.000 | 845572 | 19.3 | 102 | 24347 | |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.764 | 2.766 | -0.002 | | 2324738 | 48.9 | 103 | 30462 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.785 | 2.793 | -0.008 | | 4524447 | 55.1 | 110 | 31557 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.785 | 2.794 | -0.009 | 1.000 | 2007679 | 20.8 | 104 | 442 | |
| | 413.00 | > 169.00 | 2.785 | 2.794 | -0.009 | 1.000 | 1173150 | | 1.71(0.90-1.10) | 104 | 9149 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.793 | 2.801 | -0.008 | 1.000 | 2397725 | 20.2 | 106 | 33993 | |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.170 | 3.176 | -0.006 | | 5053172 | 46.7 | 97.7 | 19596 | |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.170 | 3.176 | -0.006 | 1.000 | 2093353 | 18.7 | 101 | 74899 | |
| | 499.00 | > 99.00 | 3.170 | 3.176 | -0.006 | 1.000 | 422020 | | 4.96(0.90-1.10) | 101 | 3686 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.170 | 3.180 | -0.010 | | 3245282 | 49.4 | 98.7 | 19765 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.170 | 3.180 | -0.010 | 1.000 | 1351075 | 20.4 | 102 | 5182 | |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.499 | 3.505 | -0.006 | | 9219278 | 50.4 | 101 | 12244 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.499 | 3.508 | -0.009 | 1.000 | 3422187 | 20.6 | 103 | 11766 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.517 | 3.528 | -0.011 | 1.000 | 630739 | 18.8 | 98.1 | 14979 | |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.517 | 3.528 | -0.011 | | 1765647 | 48.4 | 101 | 19125 | |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.527 | 3.539 | -0.012 | | 2858875 | 51.2 | 102 | 8179 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.537 | 3.542 | -0.005 | 1.000 | 1110082 | 19.8 | 99.1 | 4720 | |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.685 | 3.698 | -0.013 | | 1065558 | 49.0 | 98.1 | 8225 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.695 | 3.701 | -0.006 | 1.003 | 395381 | 20.4 | 102 | 9226 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.846 | 3.855 | -0.009 | 1.000 | 1294446 | 19.7 | 102 | 12135 | |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.855 | 3.866 | -0.011 | | 1132733 | 51.6 | 103 | 3491 | |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.864 | 3.875 | -0.011 | 1.002 | 380509 | 19.8 | 98.9 | 6354 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.864 | 3.875 | -0.011 | 1.000 | 836437 | 20.0 | 99.9 | 2028 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.864 | 3.875 | -0.011 | | 2030463 | 49.9 | 99.7 | 8924 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.977 | 3.986 | -0.009 | 2308671 | 49.0 | 98.0 | 770 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.985 | 3.992 | -0.007 | 1.000 | 826400 | 19.5 | 97.4 | 5858 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.157 | 4.168 | -0.011 | 1.000 | 867758 | 20.5 | 102 | 273 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.157 | 4.169 | -0.012 | | 2279772 | 51.1 | 102 | 6123 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.165 | 4.173 | -0.008 | | 2426441 | 49.7 | 99.4 | 5388 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.174 | 4.178 | -0.004 | 1.000 | 906622 | 20.1 | 101 | 5294 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.422 | 4.434 | -0.012 | 1.000 | 784927 | 20.2 | 101 | 271 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.663 | 4.676 | -0.013 | 1.000 | 1714163 | 19.6 | 97.8 | 165 |
| | 713.00 | > 169.00 | 4.652 | 4.676 | -0.024 | 0.998 | 207837 | 8.25(0.00-0.00) | 97.8 | 2862 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.663 | 4.676 | -0.013 | | 3931018 | 48.4 | 96.8 | 19891 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.079 | 5.091 | -0.012 | | 2169354 | 52.5 | 105 | 6034 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.087 | 5.092 | -0.005 | 1.000 | 726480 | 19.5 | 97.3 | 152 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.449 | 5.458 | -0.009 | 1.000 | 655993 | 18.8 | 94.0 | 274 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULLL-L4_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_006.d

Injection Date: 23-Jul-2017 13:30:50

Instrument ID: A8_N

Lims ID: IC L4 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

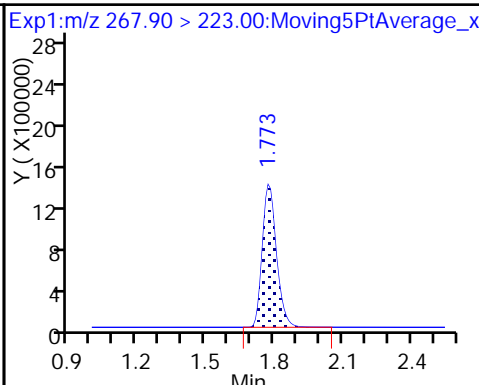
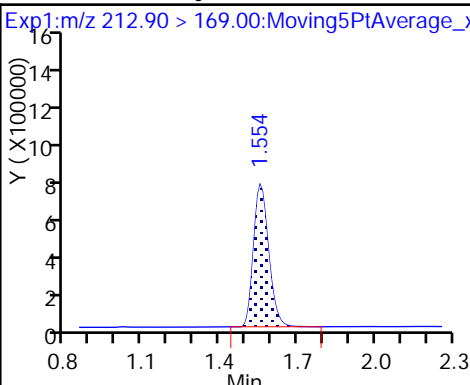
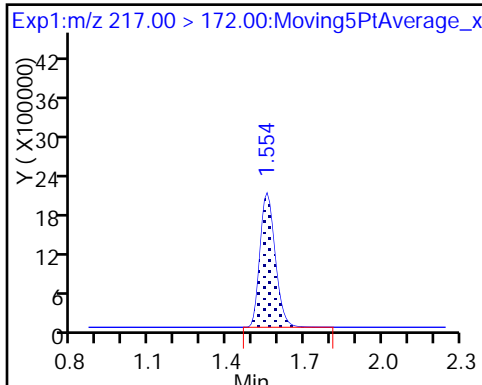
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

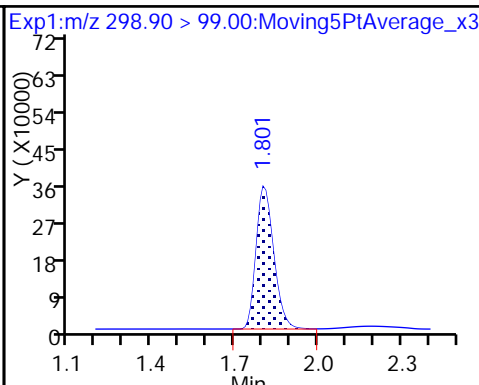
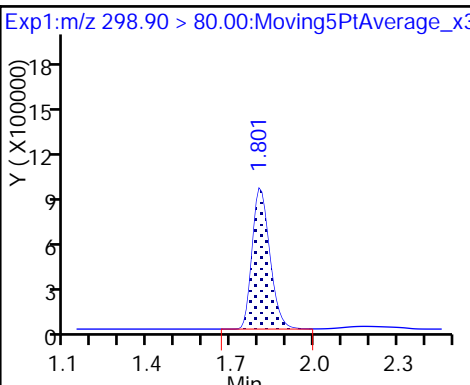
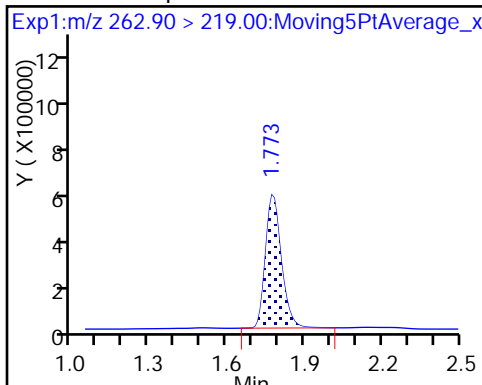
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

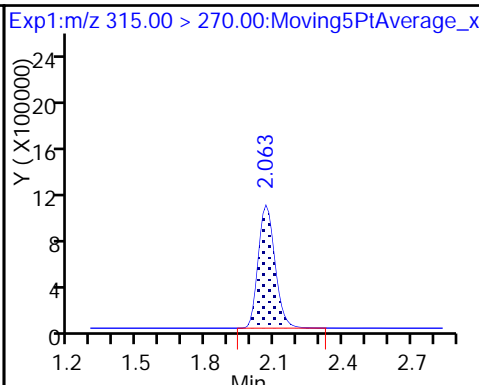
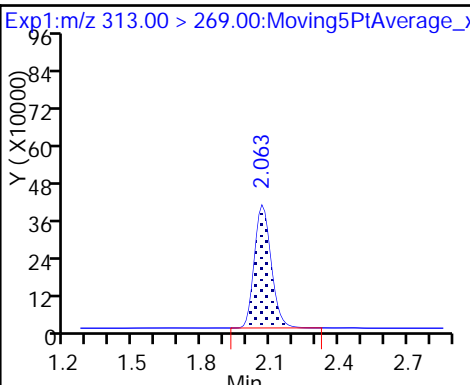
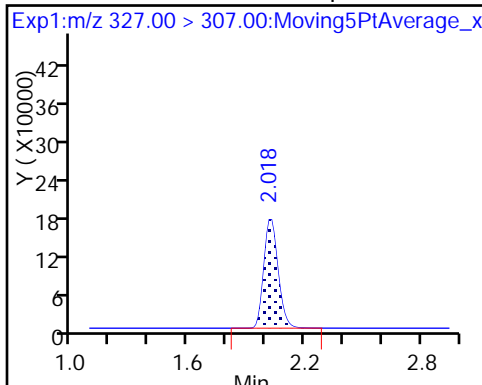
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

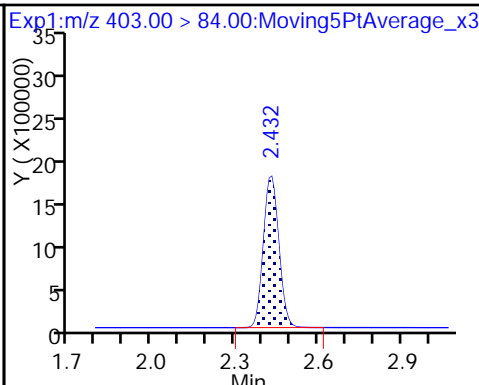
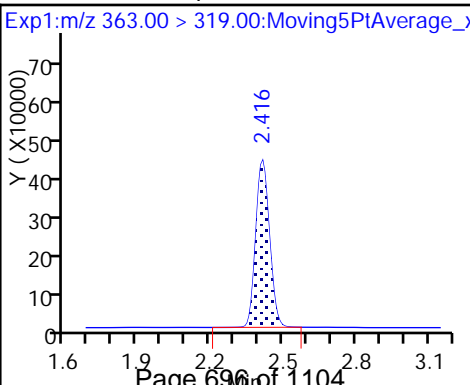
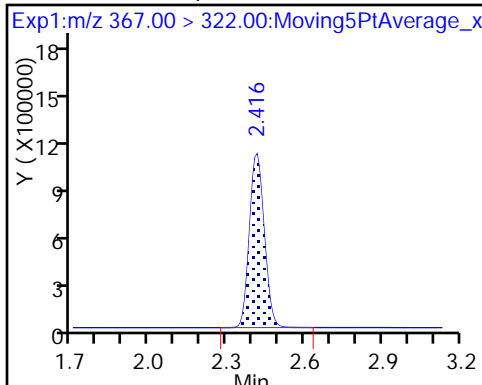
D 7 13C2 PFHxA



D 9 13C4-PFHpA

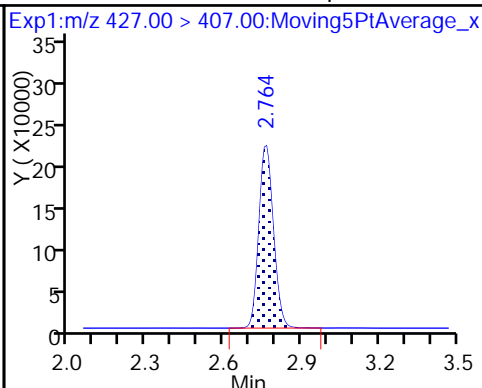
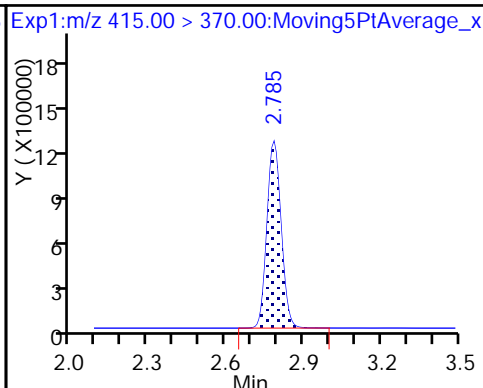
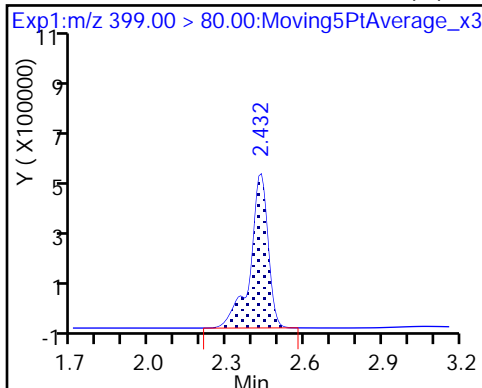
10 Perfluoroheptanoic acid

D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid (M) * 62 13C2-PFOA

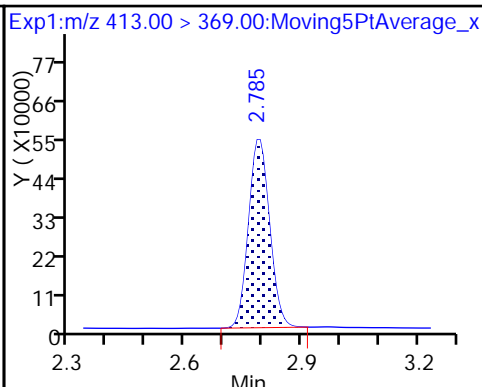
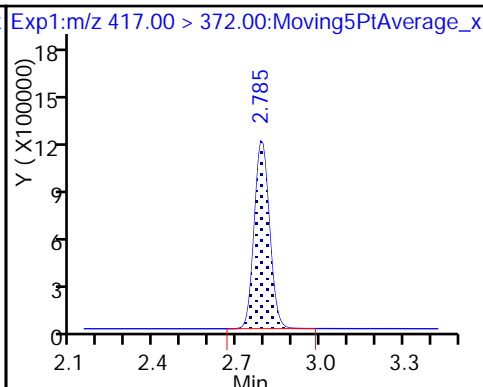
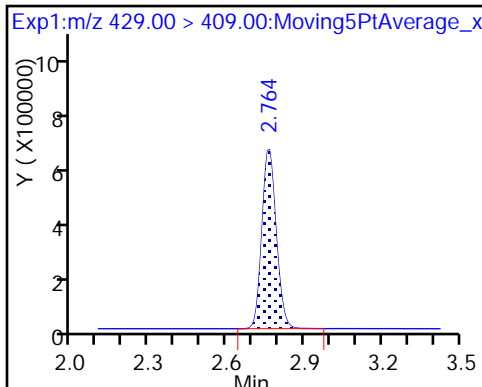
13 Sodium 1H,1H,2H,2H-perfluorooctane



D 12 M2-6:2FTS

D 14 13C4 PFOA

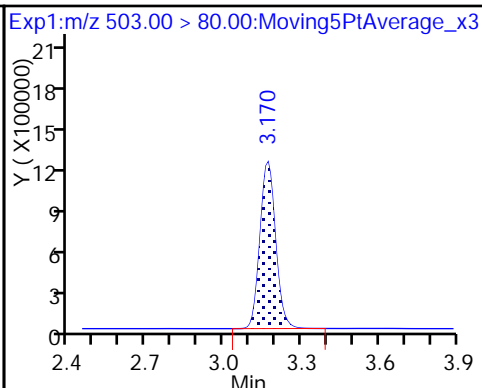
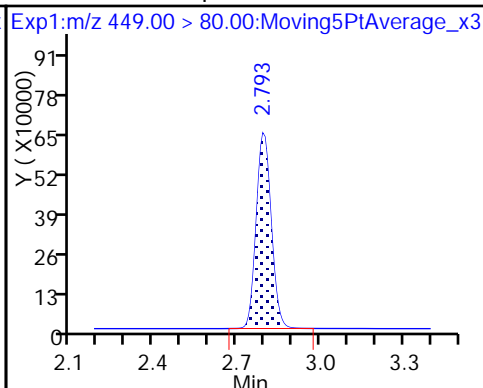
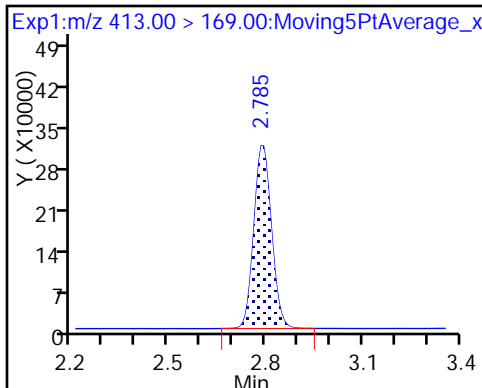
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

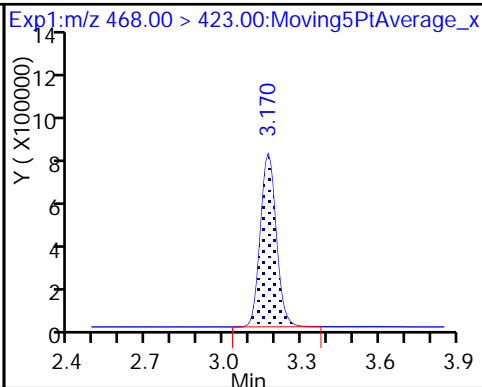
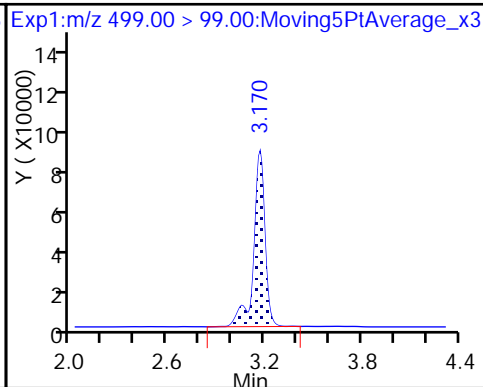
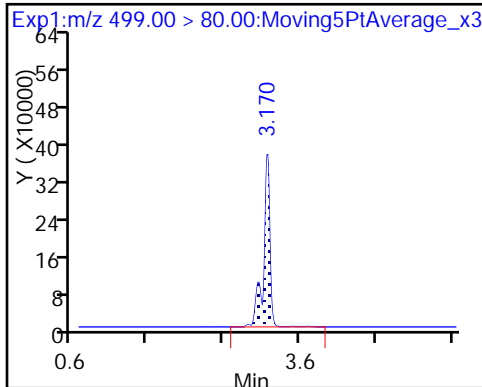
D 18 13C4 PFOS

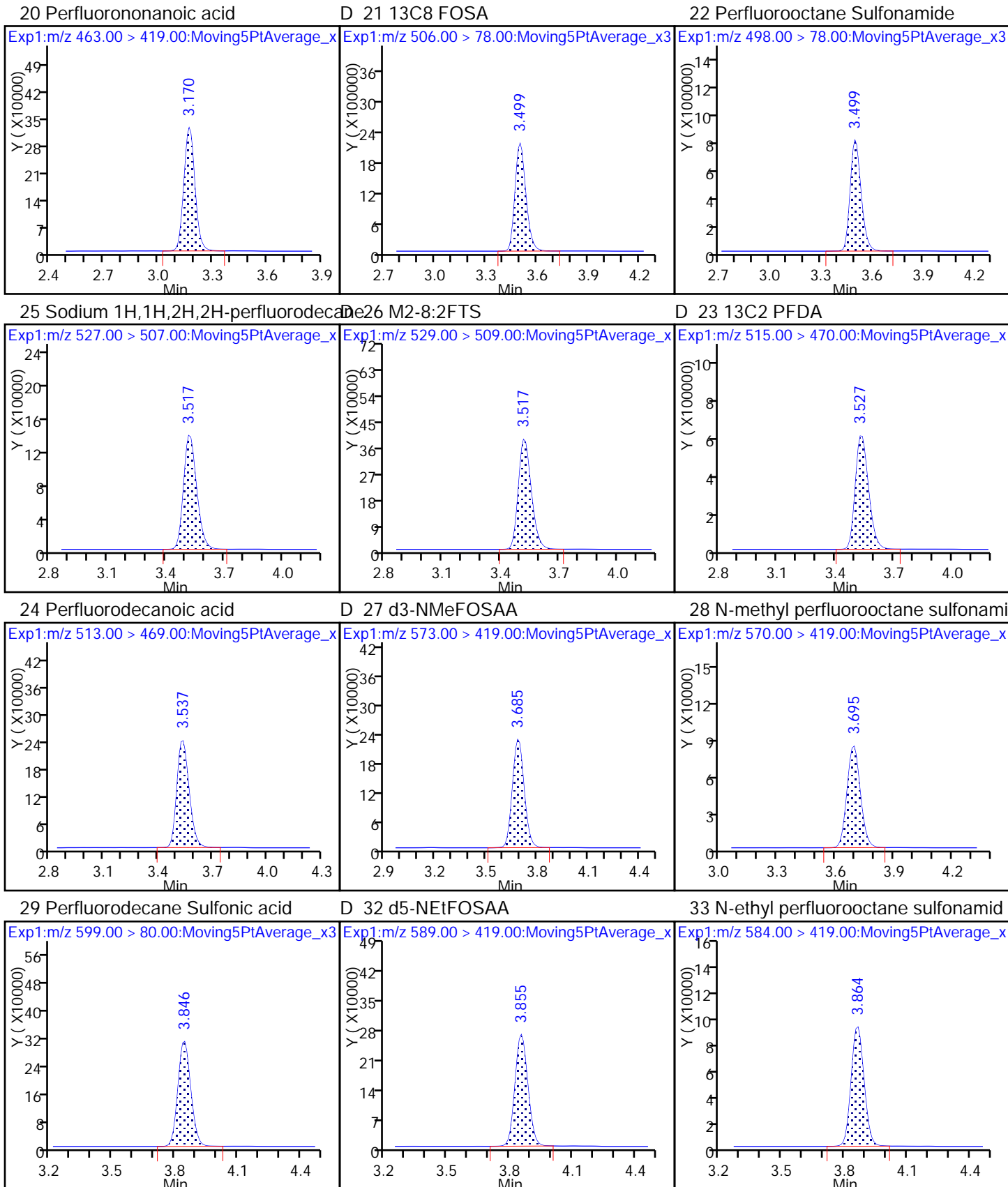


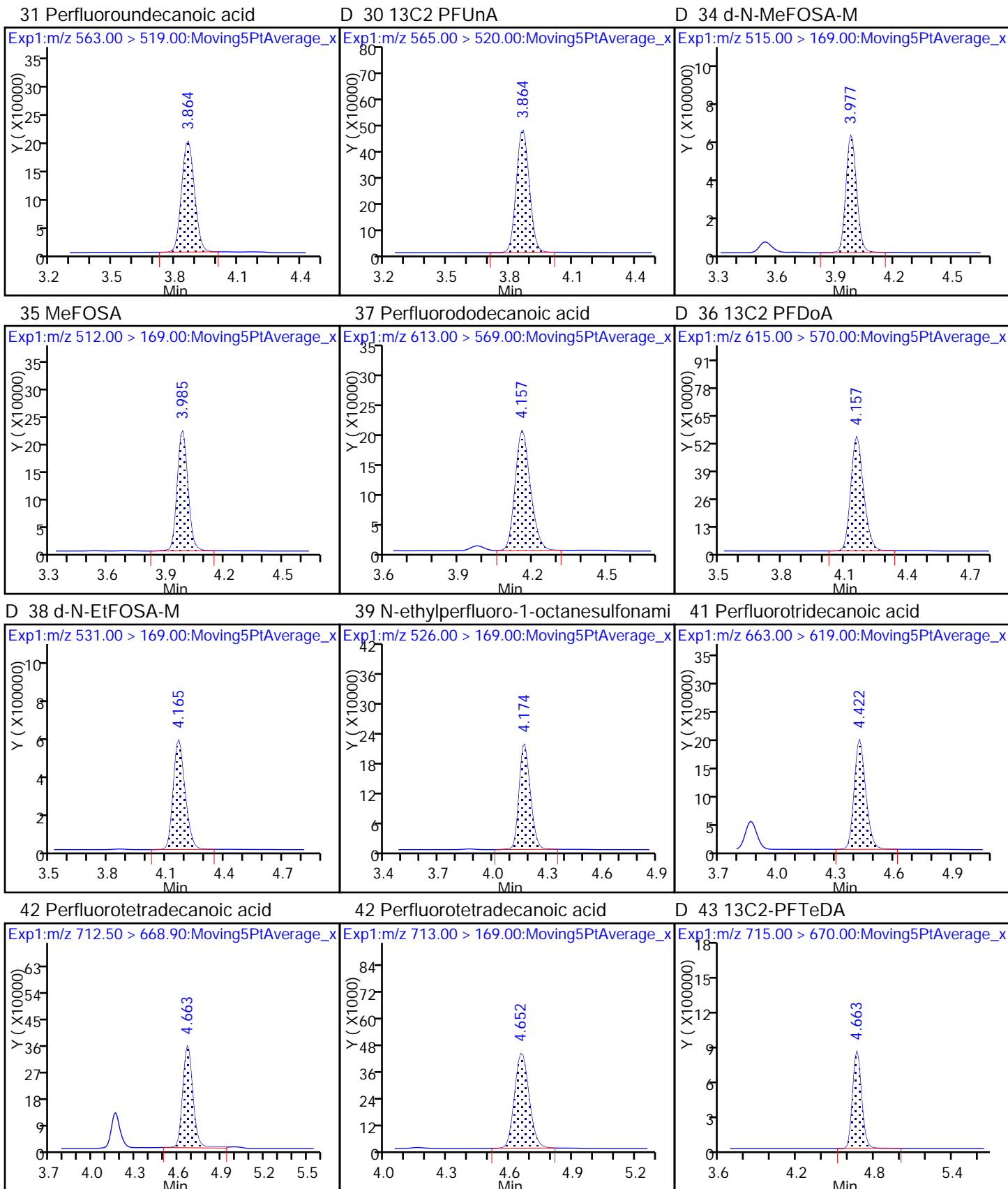
17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA



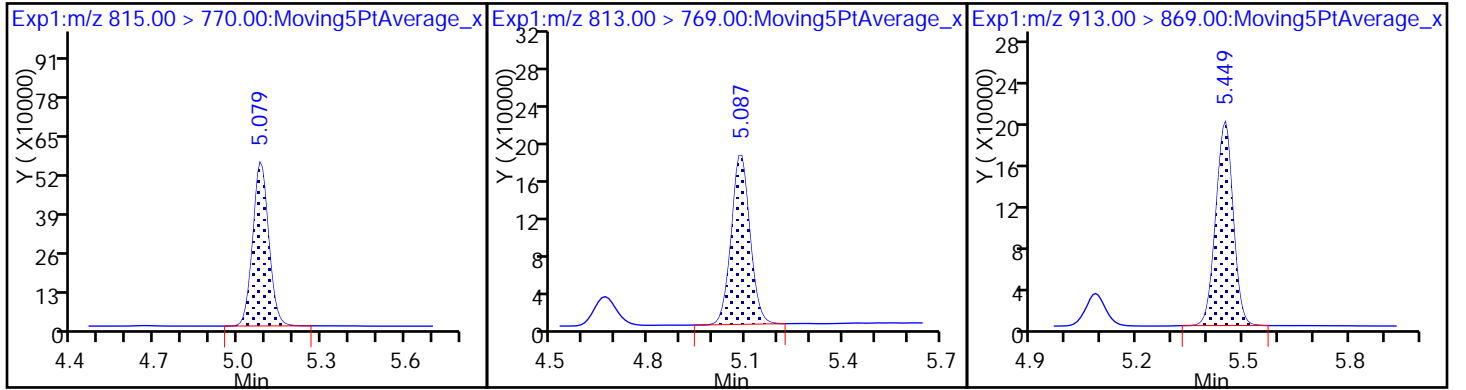




D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento

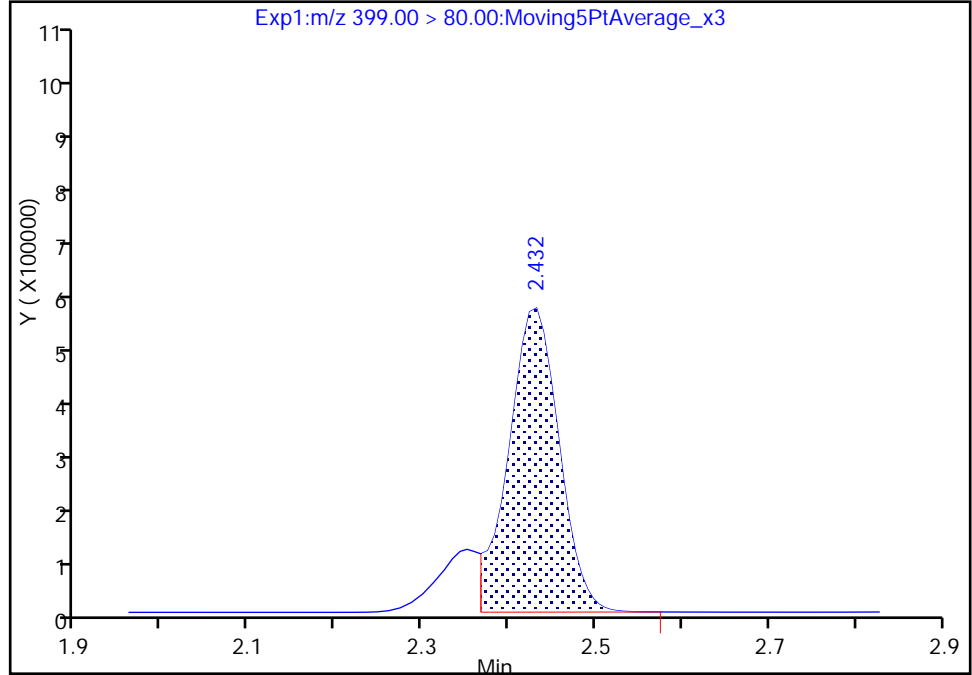
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Injection Date: 23-Jul-2017 13:30:50 Instrument ID: A8_N
Lims ID: IC L4 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

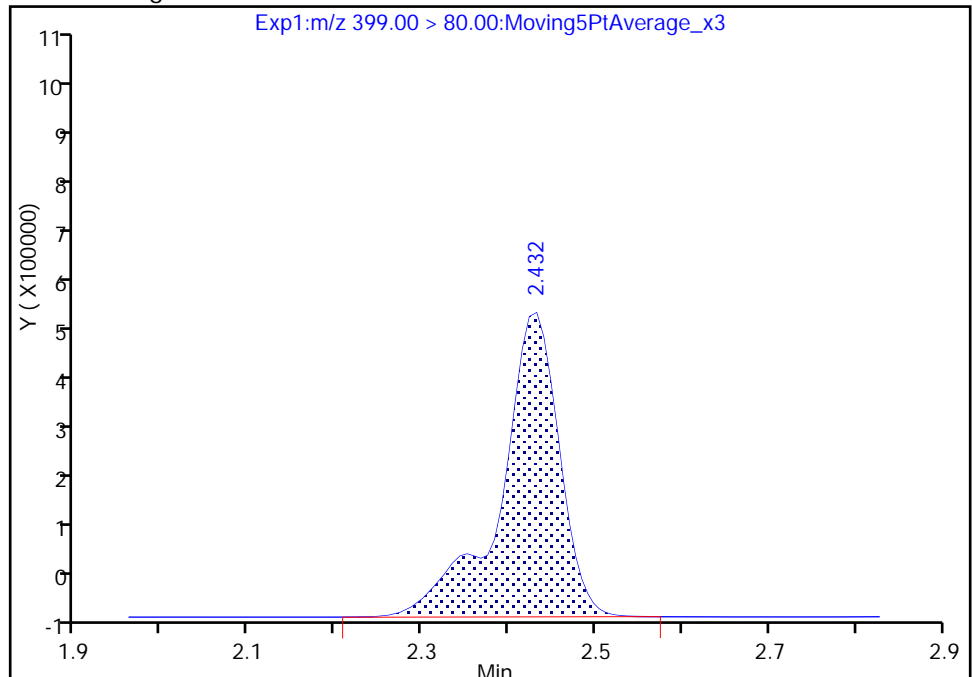
RT: 2.43
Area: 2265162
Amount: 16.173991
Amount Units: ng/ml

Processing Integration Results



RT: 2.43
Area: 2654948
Amount: 17.271436
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 23-Jul-2017 15:02:47
Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_007.d
 Lims ID: IC L5 Full
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 23-Jul-2017 13:37:44 ALS Bottle#: 32 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 11:24:42 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 15:03:30

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.555 | 1.558 | -0.003 | 7884062 | 50.5 | | 101 | 41182 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.565 | 1.564 | 0.001 | 6963312 | 50.1 | | 100 | 3830 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.774 | 1.780 | -0.006 | 5668374 | 51.3 | | 103 | 69487 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.784 | 1.783 | 0.001 | 5464599 | 46.3 | | 92.5 | 3701 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.802 | 1.806 | -0.004 | 134754 | NC | | | 4423 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.802 | 1.808 | -0.006 | 9206165 | 43.9 | | 99.2 | 5529 | |
| | 298.90 > 99.00 | 1.802 | 1.808 | -0.006 | 3733944 | | 2.47(0.00-0.00) | 99.2 | 5135 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.020 | 2.026 | -0.006 | 2141036 | 44.3 | | 94.8 | 53420 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.066 | 2.070 | -0.004 | 5074168 | 50.2 | | 100 | 42053 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.066 | 2.070 | -0.004 | 4748124 | 49.1 | | 98.3 | 10464 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.415 | 2.420 | -0.005 | 4116140 | 47.0 | | 94.1 | 9360 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.415 | 2.420 | -0.005 | 4262989 | 50.9 | | 102 | 35081 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.431 | 2.436 | -0.005 | 6455854 | 42.3 | | 93.0 | 4896 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.431 | 2.436 | -0.005 | 6667053 | 48.5 | | 103 | 40208 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.783 | 2.740 | 0.043 | 4190941 | 50.0 | | 30572 | |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.761 | 2.766 | -0.005 | 2365496 | 49.7 | | 105 | 41334 |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.761 | 2.766 | -0.005 | 1.000 | 2050076 | 46.0 | 97.0 | 89011 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.790 | 2.793 | -0.003 | 4409764 | 53.7 | | 107 | 31138 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.790 | 2.794 | -0.004 | 1.000 | 4489705 | 47.7 | 95.4 | 1084 |
| | 413.00 | > 169.00 | 2.790 | 2.794 | -0.004 | 1.000 | 2729143 | 1.65(0.90-1.10) | 95.4 | 10757 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.790 | 2.801 | -0.011 | 1.000 | 5765727 | 48.0 | 101 | 35622 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.168 | 3.176 | -0.008 | 1.000 | 5048139 | 44.6 | 96.2 | 8169 |
| | 499.00 | > 99.00 | 3.168 | 3.176 | -0.008 | 1.000 | 1063282 | 4.75(0.90-1.10) | 96.2 | 9015 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.168 | 3.176 | -0.008 | 5115538 | 47.3 | | 98.9 | 20578 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.168 | 3.180 | -0.012 | 1.000 | 3227789 | 48.1 | 96.2 | 8615 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.168 | 3.180 | -0.012 | 3295100 | 50.1 | | 100 | 25349 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.495 | 3.505 | -0.010 | 9462080 | 51.8 | | 104 | 19557 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.505 | 3.508 | -0.003 | 1.000 | 8336711 | 48.8 | 97.7 | 19603 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.515 | 3.528 | -0.013 | 1861315 | 51.0 | | 106 | 27121 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.515 | 3.528 | -0.013 | 1.000 | 1539793 | 43.5 | 90.8 | 22299 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.526 | 3.539 | -0.013 | 2822332 | 50.5 | | 101 | 9113 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.526 | 3.542 | -0.016 | 1.000 | 2585881 | 46.8 | 93.5 | 6184 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.691 | 3.698 | -0.007 | 1147829 | 52.8 | | 106 | 7574 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.691 | 3.701 | -0.010 | 1.000 | 1039957 | 49.8 | 99.6 | 10288 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.845 | 3.855 | -0.010 | 1.000 | 3217983 | 48.3 | 100 | 10491 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.854 | 3.866 | -0.012 | 1055395 | 48.1 | | 96.2 | 3721 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.864 | 3.875 | -0.011 | 1922444 | 47.2 | | 94.4 | 12708 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.864 | 3.875 | -0.011 | 1.000 | 1958756 | 49.6 | 99.1 | 5557 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.864 | 3.875 | -0.011 | 1.002 | 890173 | 49.7 | 99.4 | 9884 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.984 | 3.986 | -0.002 | 2390079 | 50.7 | 101 | 841 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.984 | 3.992 | -0.008 | 1.000 | 2110821 | 48.1 | 96.2 | 7360 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.160 | 4.168 | -0.008 | 1.000 | 2160889 | 53.4 | 107 | 766 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.160 | 4.169 | -0.009 | 2178974 | 48.8 | 97.6 | 5444 | |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.168 | 4.173 | -0.005 | 2471592 | 50.6 | 101 | 5387 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.177 | 4.178 | -0.001 | 1.000 | 2258565 | 49.3 | 98.5 | 7407 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.424 | 4.434 | -0.010 | 1.000 | 1827022 | 49.2 | 98.5 | 653 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.661 | 4.676 | -0.015 | 4114168 | 50.7 | 101 | 19822 | |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.661 | 4.676 | -0.015 | 1.000 | 3772981 | 45.0 | 90.1 | 292 |
| | 713.00 | > 169.00 | 4.661 | 4.676 | -0.015 | 1.000 | 496979 | 7.59(0.00-0.00) | 90.1 | 5521 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.081 | 5.091 | -0.010 | 2047502 | 49.6 | 99.1 | 5290 | |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.081 | 5.092 | -0.011 | 1.000 | 1711676 | 48.9 | 97.9 | 324 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.442 | 5.458 | -0.016 | 1.000 | 1598412 | 47.9 | 95.9 | 684 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_007.d

Injection Date: 23-Jul-2017 13:37:44

Instrument ID: A8_N

Lims ID: IC L5 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

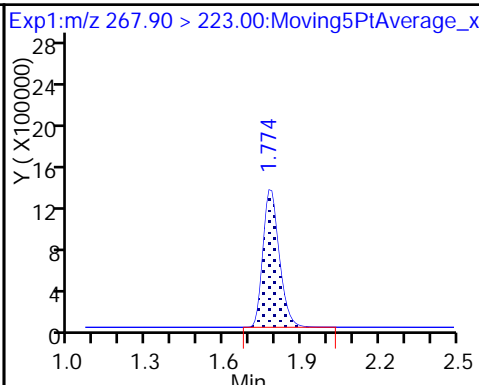
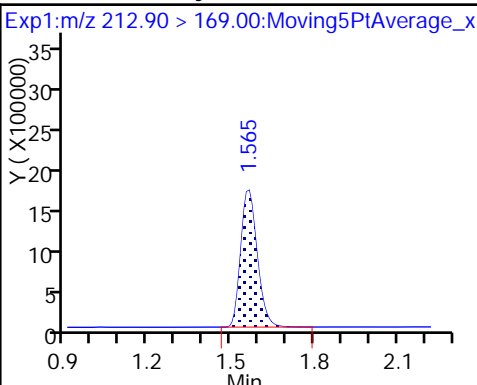
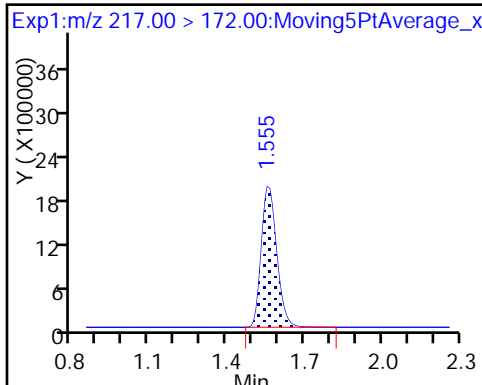
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

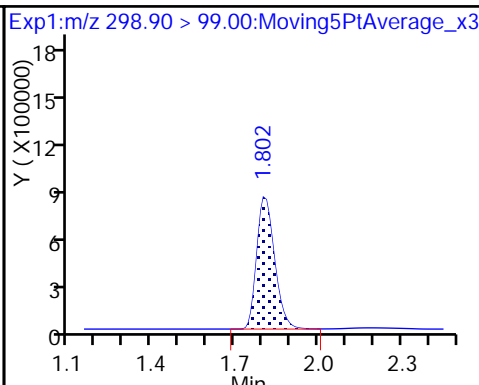
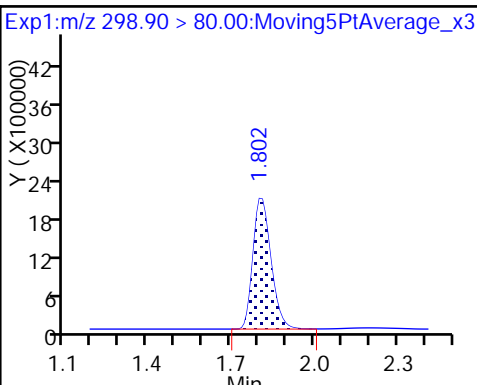
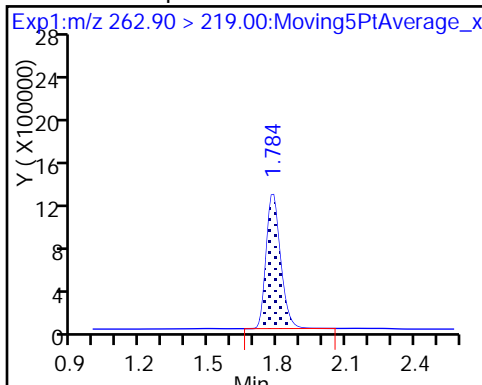
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

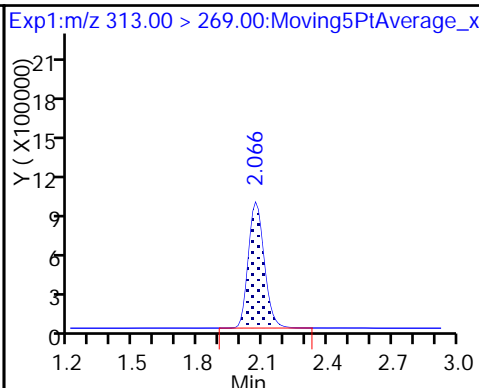
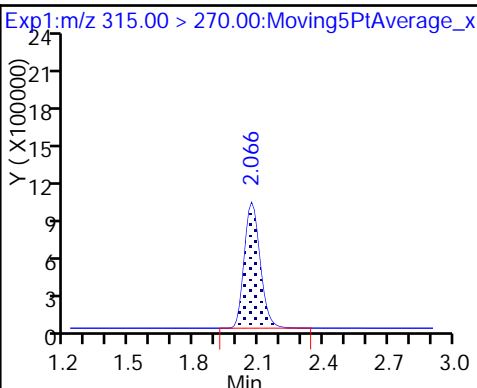
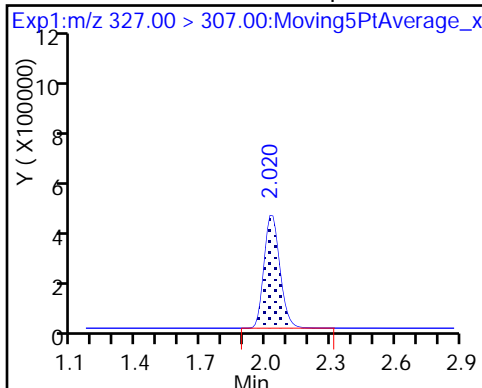
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

D 7 13C2 PFHxA

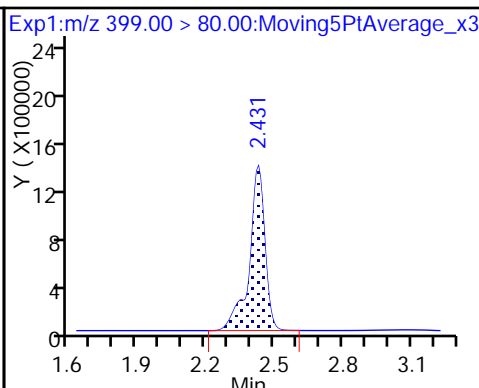
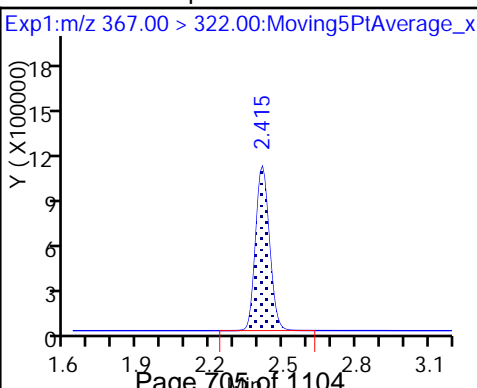
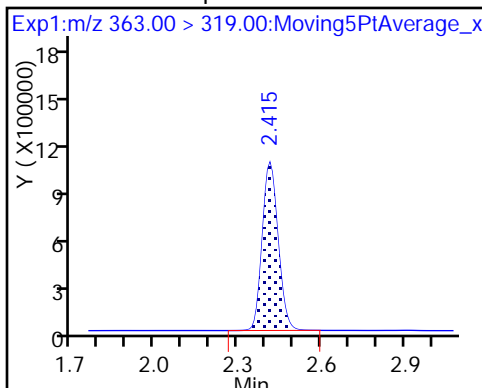
6 Perfluorohexanoic acid



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

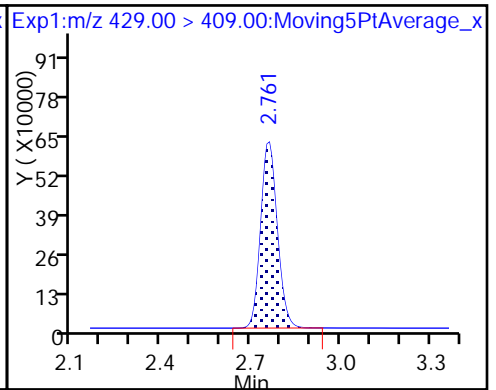
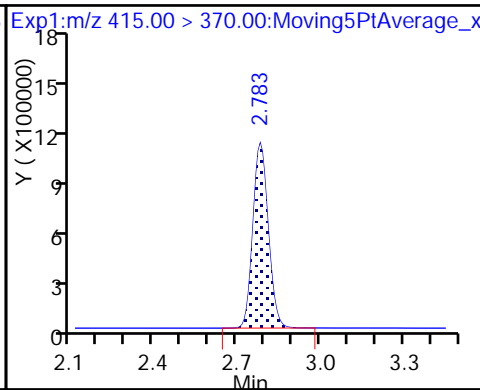
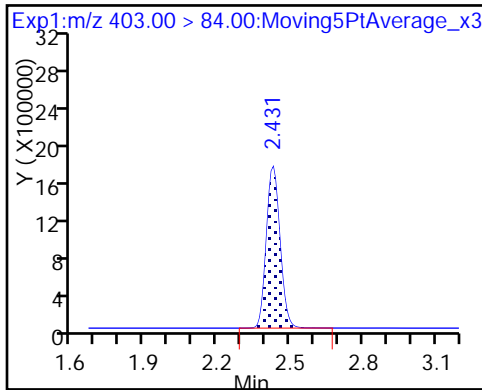
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

* 62 13C2-PFOA

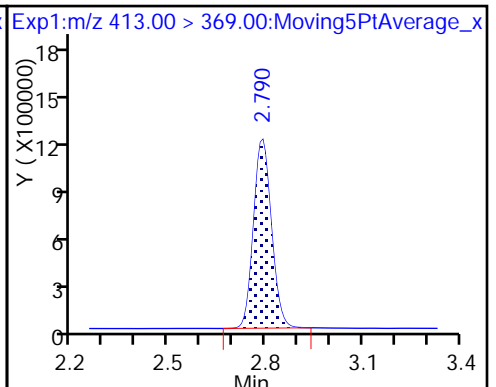
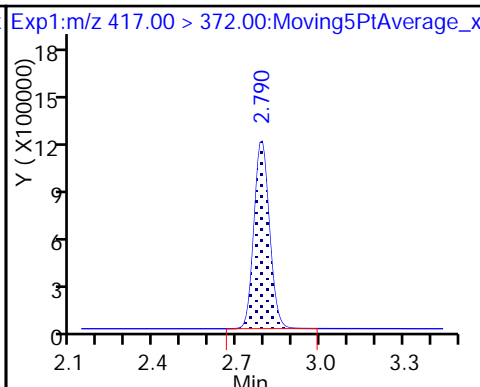
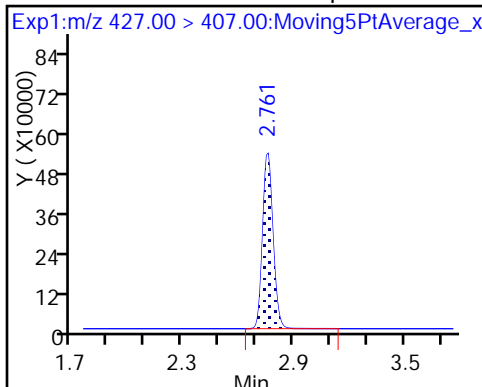
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctadecanoic acid

D 14 13C4 PFOA

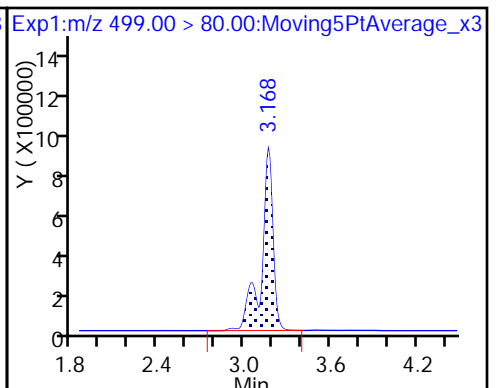
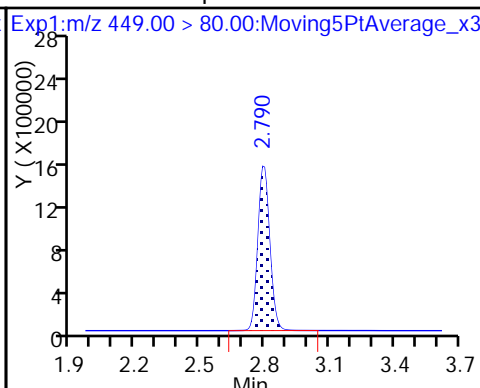
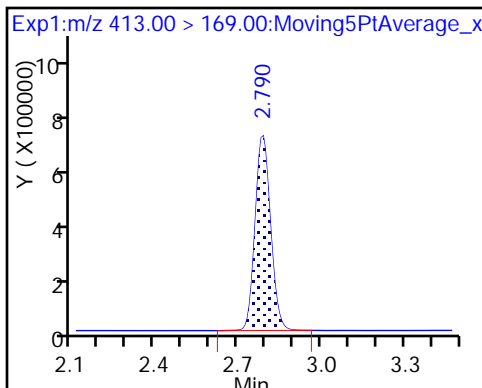
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

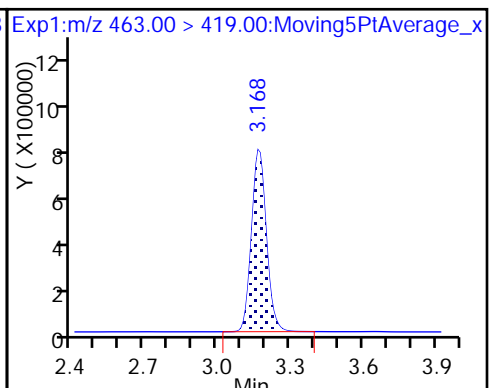
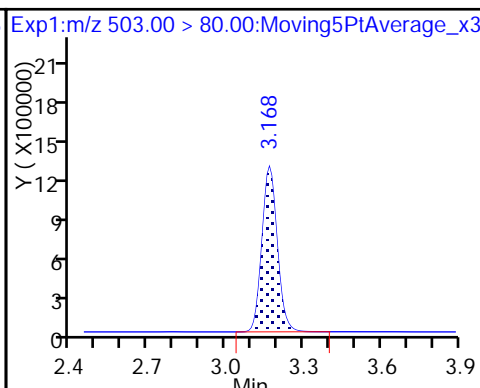
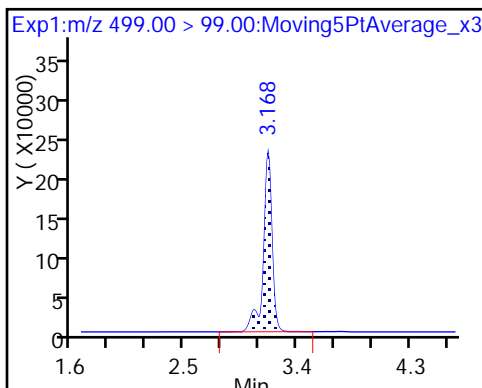
17 Perfluorooctane sulfonic acid



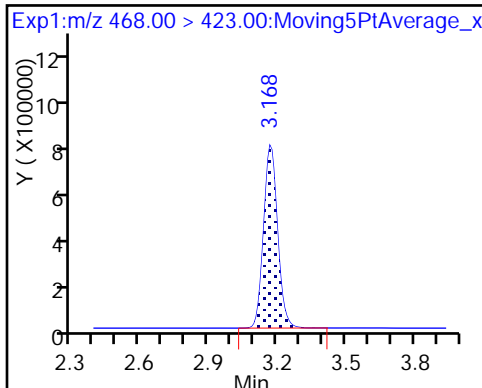
17 Perfluorooctane sulfonic acid

D 18 13C4 PFOS

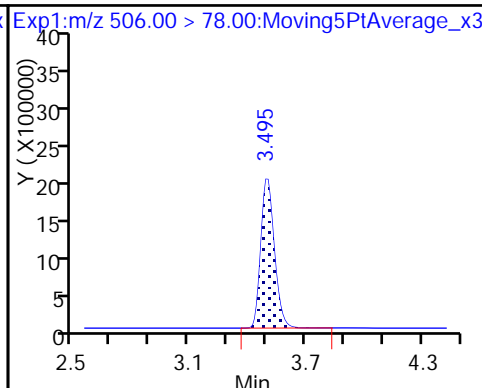
20 Perfluorononanoic acid



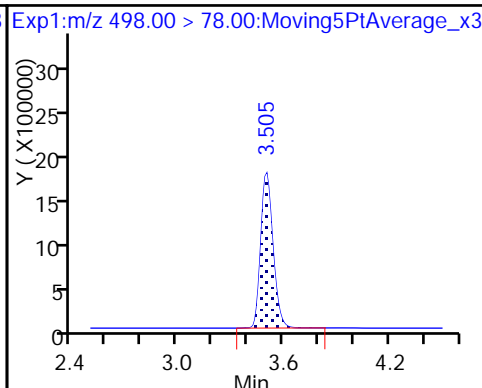
D 19 13C5 PFNA



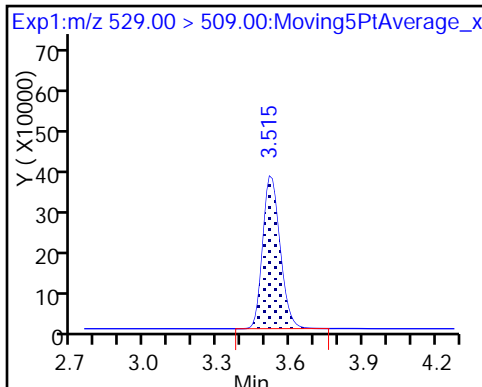
D 21 13C8 FOSA



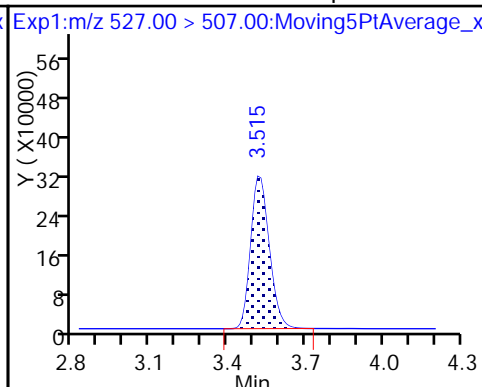
22 Perfluorooctane Sulfonamide



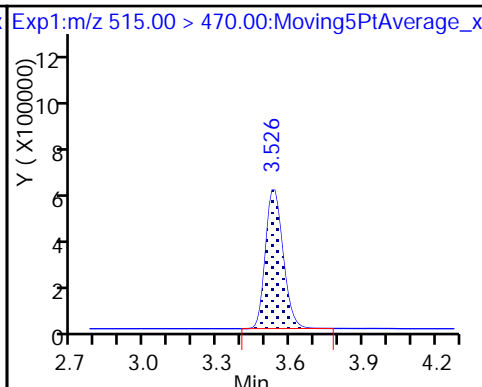
D 26 M2-8:2FTS



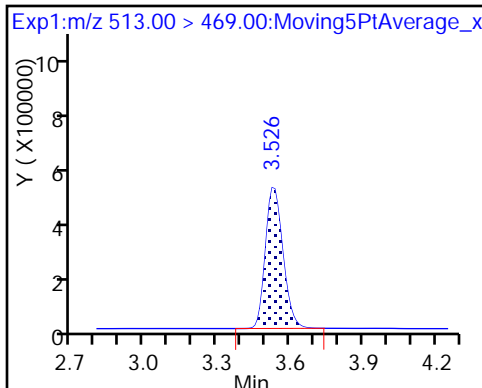
25 Sodium 1H,1H,2H,2H-perfluorodeca



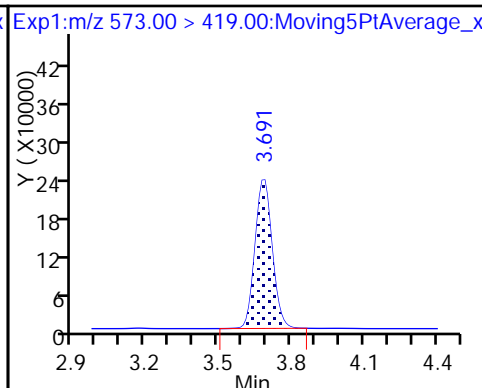
De23 13C2 PFDA



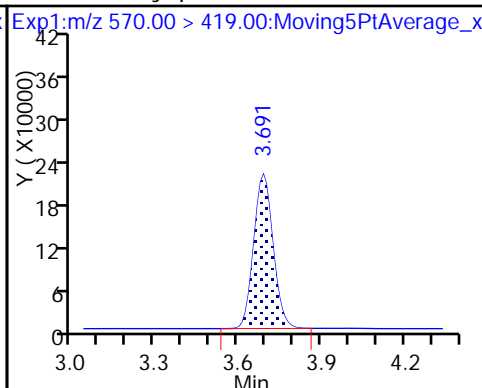
24 Perfluorodecanoic acid



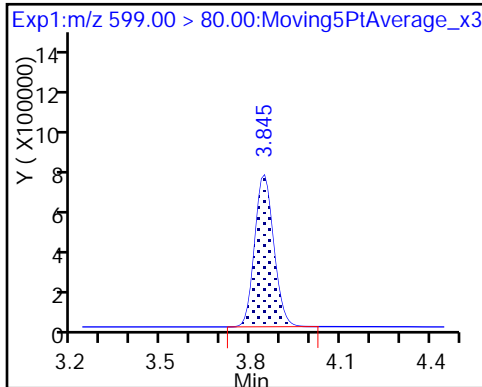
D 27 d3-NMeFOSAA



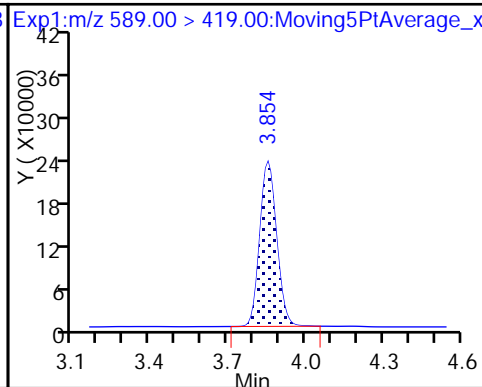
28 N-methyl perfluorooctane sulfonami



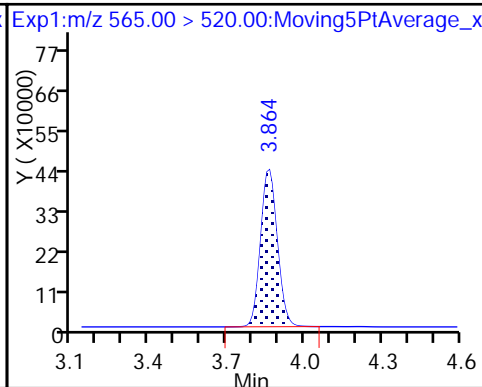
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA



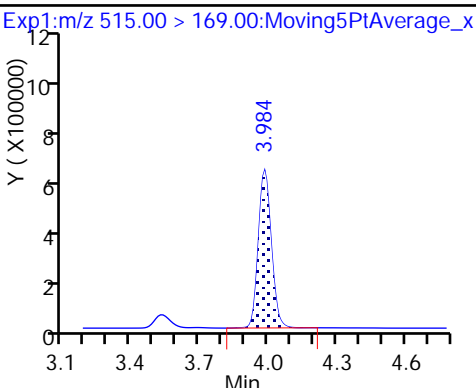
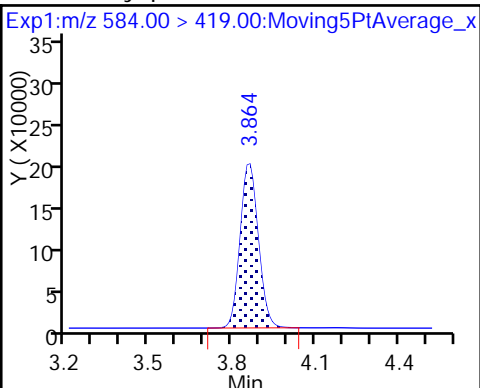
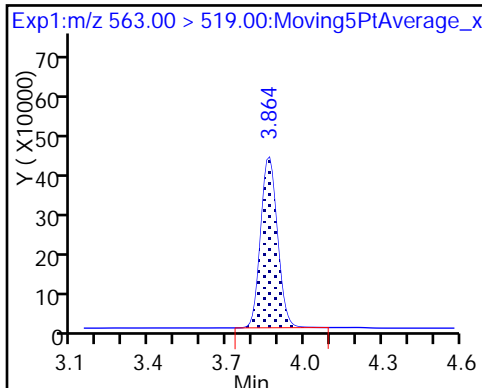
D 30 13C2 PFUnA



31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid D

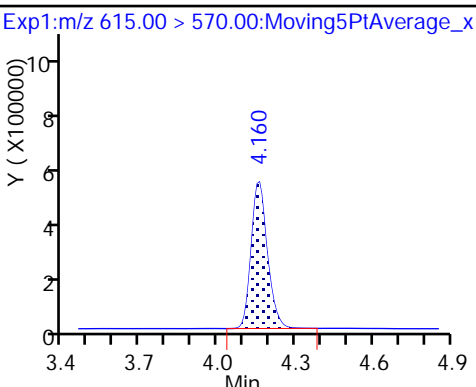
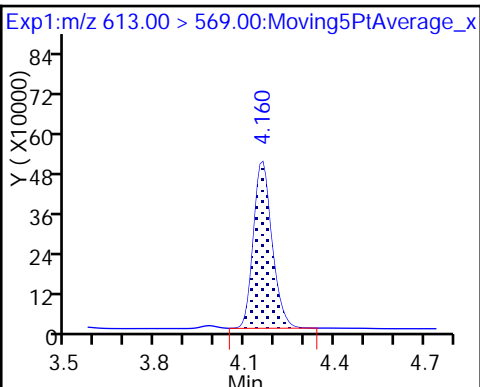
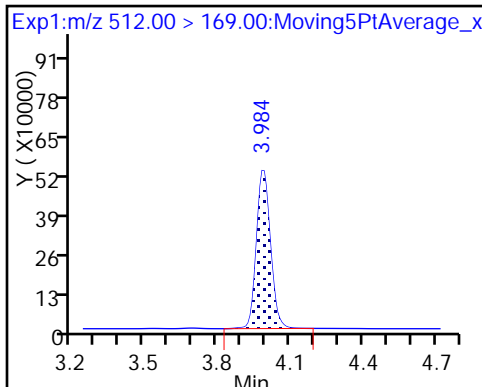
34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

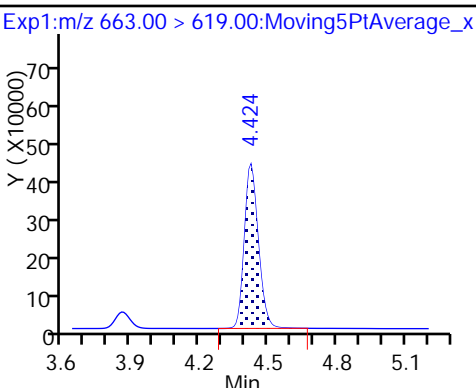
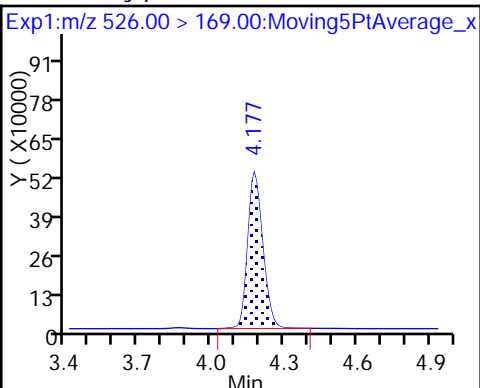
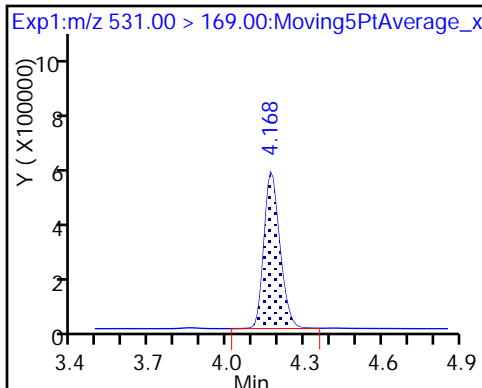
D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

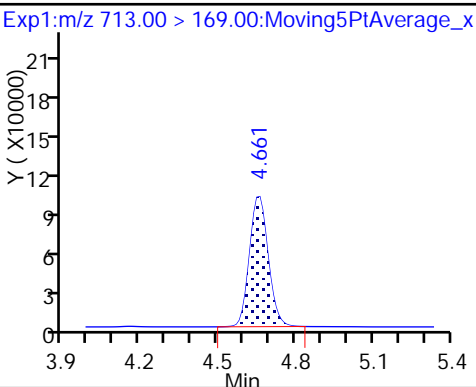
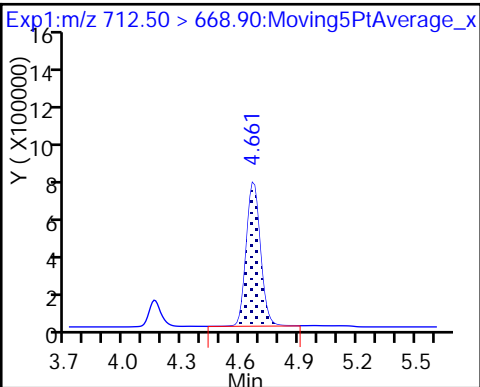
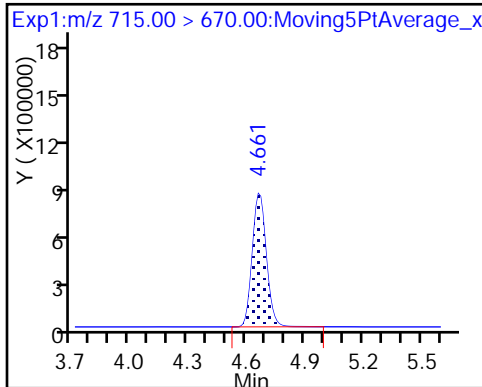
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

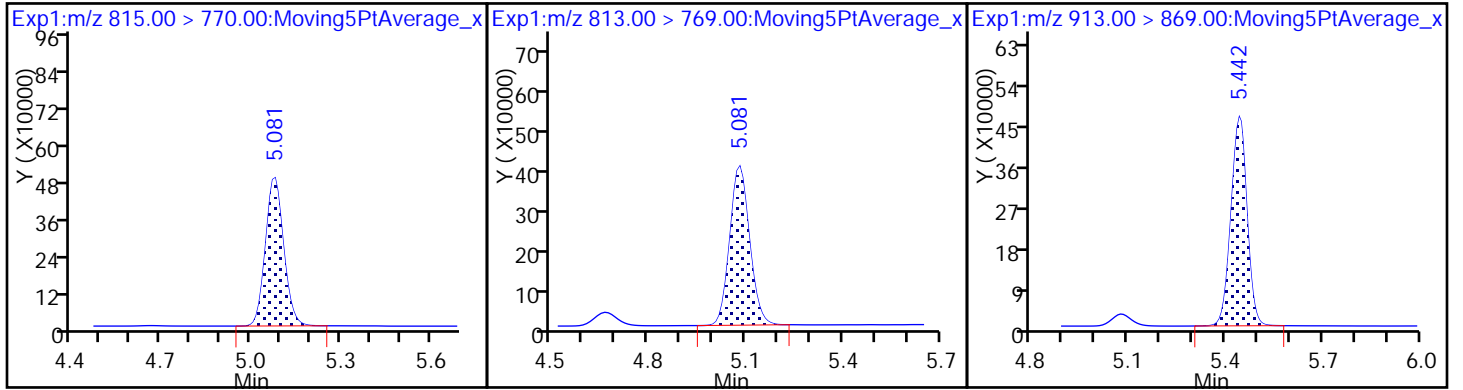
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_008.d
 Lims ID: IC L6 Full
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 23-Jul-2017 13:44:37 ALS Bottle#: 33 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 11:24:45 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 15:04:18

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.556 | 1.558 | -0.002 | 7747958 | 49.7 | | 99.3 | 38647 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.565 | 1.564 | 0.001 | 12999409 | 95.1 | | 95.1 | 6104 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.784 | 1.780 | 0.004 | 5356421 | 48.5 | | 97.0 | 56526 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.784 | 1.783 | 0.001 | 10886829 | 97.5 | | 97.5 | 6702 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.802 | 1.806 | -0.004 | 129076 | NC | | | 4899 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.813 | 1.808 | 0.005 | 16053252 | 79.3 | | 89.7 | 7955 | |
| | 298.90 > 99.00 | 1.802 | 1.808 | -0.006 | 7321311 | | 2.19(0.00-0.00) | 89.7 | 8438 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.032 | 2.026 | 0.006 | 4075896 | 91.0 | | 97.4 | 80674 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.066 | 2.070 | -0.004 | 8788456 | 96.8 | | 96.8 | 17483 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.066 | 2.070 | -0.004 | 4765607 | 47.1 | | 94.2 | 34981 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.416 | 2.420 | -0.004 | 4123520 | 49.2 | | 98.4 | 26121 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.416 | 2.420 | -0.004 | 7914021 | 93.5 | | 93.5 | 14019 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.432 | 2.436 | -0.004 | 6433219 | 46.8 | | 99.0 | 30183 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.432 | 2.436 | -0.004 | 12621118 | 85.8 | | 94.3 | 6805 | M |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags | |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-------|-----------------|-------|-------|
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.785 | 2.740 | 0.045 | 3590668 | 50.0 | | 24688 | | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.756 | 2.766 | -0.010 | 1.000 | 3742357 | 90.6 | 95.5 | 40418 | |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.756 | 2.766 | -0.010 | | 2191385 | 46.1 | 97.0 | 26801 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.785 | 2.793 | -0.008 | | 3678248 | 44.8 | 89.6 | 25293 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.785 | 2.794 | -0.009 | 1.000 | 7841830 | 99.9 | 99.9 | 1572 | |
| | 413.00 | > 169.00 | 2.785 | 2.794 | -0.009 | 1.000 | 4781867 | | 1.64(0.90-1.10) | 99.9 | 13688 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.792 | 2.801 | -0.009 | 1.000 | 10965918 | 89.6 | 94.2 | 40769 | |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.170 | 3.176 | -0.006 | | 5213679 | 48.2 | 101 | 15286 | |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.170 | 3.176 | -0.006 | 1.000 | 10055816 | 87.2 | 94.0 | 8421 | |
| | 499.00 | > 99.00 | 3.170 | 3.176 | -0.006 | 1.000 | 2139232 | | 4.70(0.90-1.10) | 94.0 | 13271 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.170 | 3.180 | -0.010 | | 3093351 | 47.1 | 94.1 | 25813 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.170 | 3.180 | -0.010 | 1.000 | 6011197 | 95.4 | 95.4 | 13300 | |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.510 | 3.505 | 0.005 | | 8997387 | 49.2 | 98.4 | 13278 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.510 | 3.508 | 0.002 | 1.000 | 16123202 | 99.4 | 99.4 | 20633 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.520 | 3.528 | -0.008 | 1.000 | 2923571 | 92.2 | 96.3 | 13336 | |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.520 | 3.528 | -0.008 | | 1666985 | 45.7 | 95.3 | 19640 | |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.531 | 3.539 | -0.008 | | 2576945 | 46.2 | 92.3 | 7872 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.542 | 3.542 | 0.0 | 1.000 | 5119744 | 101.4 | 101 | 9516 | |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.687 | 3.698 | -0.011 | | 1068765 | 49.2 | 98.4 | 6040 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.698 | 3.701 | -0.003 | 1.003 | 2007359 | 103.2 | 103 | 18812 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.851 | 3.855 | -0.004 | 1.000 | 6522922 | 96.1 | 99.7 | 17457 | |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.861 | 3.866 | -0.005 | | 1068267 | 48.7 | 97.4 | 2900 | |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.870 | 3.875 | -0.005 | 1.002 | 1804400 | 99.5 | 99.5 | 13325 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.870 | 3.875 | -0.005 | 1.000 | 3918710 | 102.4 | 102 | 4859 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.870 | 3.875 | -0.005 | | 1864568 | 45.8 | 91.6 | 13023 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.995 | 3.986 | 0.009 | 2454402 | 52.1 | 104 | 772 | |
| 35 MeFOSA | 512.00 | > 169.00 | 4.003 | 3.992 | 0.011 | 1.000 | 4575819 | 101.5 | 102 | 7909 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.158 | 4.168 | -0.010 | 1.000 | 3604171 | 88.1 | 88.1 | 1094 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.167 | 4.169 | -0.002 | | 2201944 | 49.3 | 98.6 | 8197 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.184 | 4.173 | 0.011 | | 2530450 | 51.8 | 104 | 4390 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.184 | 4.178 | 0.006 | 1.000 | 4527078 | 96.5 | 96.5 | 6069 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.430 | 4.434 | -0.004 | 1.000 | 3755028 | 100.2 | 100 | 1312 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.667 | 4.676 | -0.009 | 1.000 | 7729497 | 91.3 | 91.3 | 577 |
| | 713.00 | > 169.00 | 4.655 | 4.676 | -0.021 | 0.997 | 1024291 | 7.55(0.00-0.00) | 91.3 | 9439 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.667 | 4.676 | -0.009 | | 3733385 | 46.0 | 91.9 | 13666 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.079 | 5.091 | -0.012 | | 2075916 | 50.3 | 101 | 4789 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.079 | 5.092 | -0.013 | 1.000 | 3564510 | 101.6 | 102 | 483 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.441 | 5.458 | -0.017 | 1.000 | 3408805 | 101.2 | 101 | 1142 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L6_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_008.d

Injection Date: 23-Jul-2017 13:44:37

Instrument ID: A8_N

Lims ID: IC L6 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 33

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

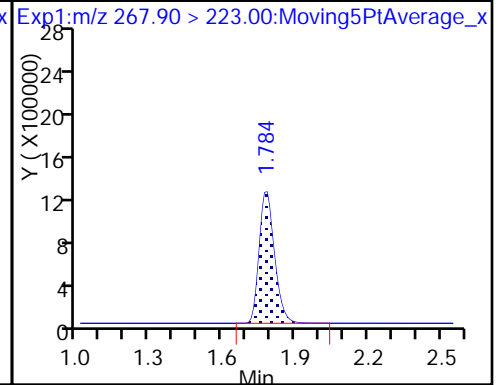
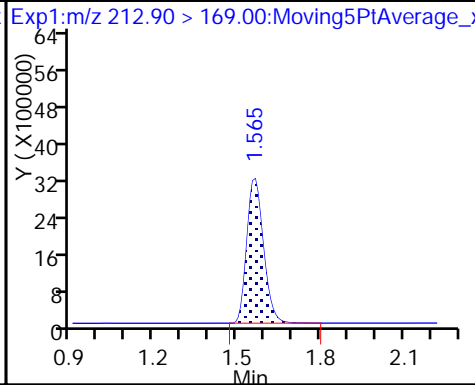
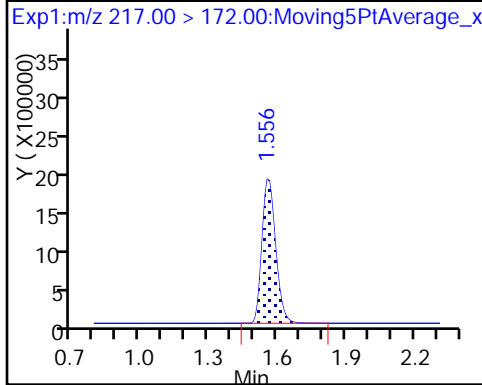
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

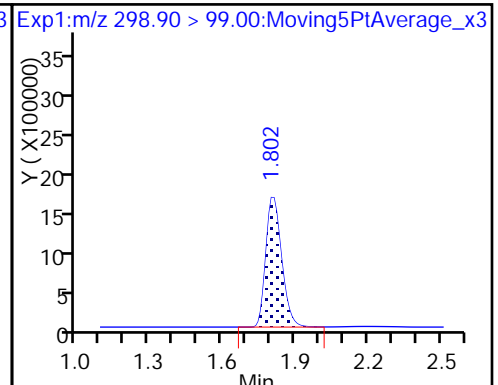
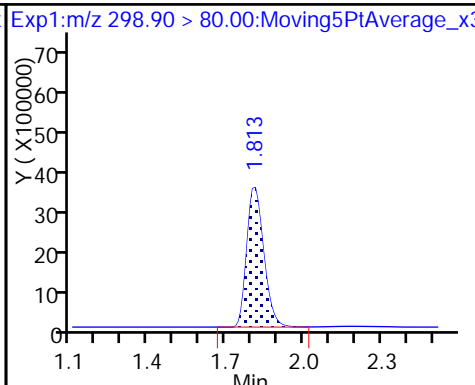
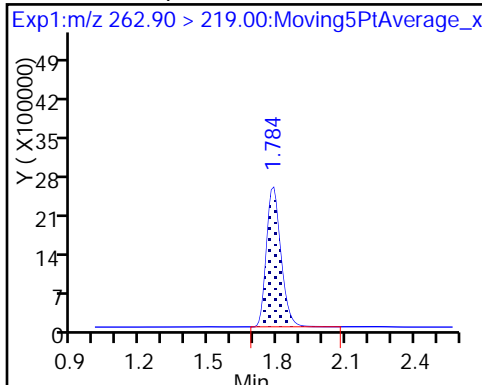
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

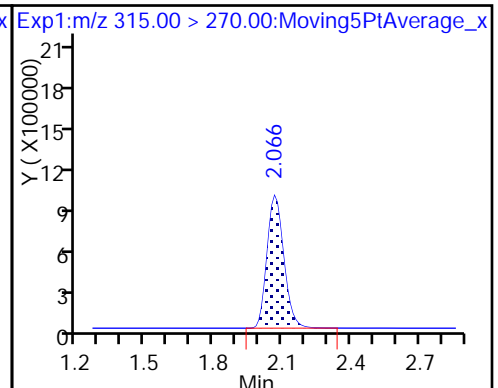
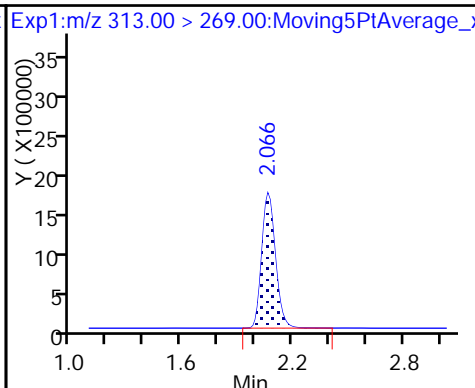
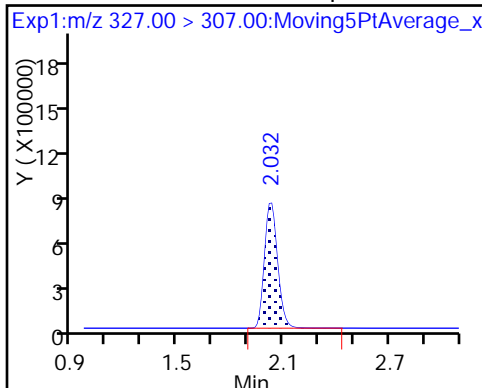
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

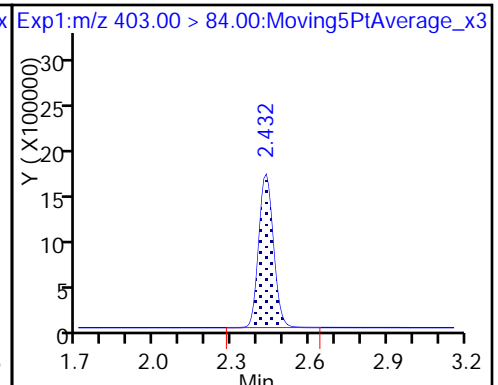
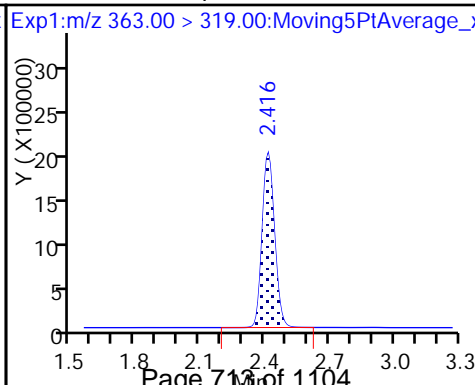
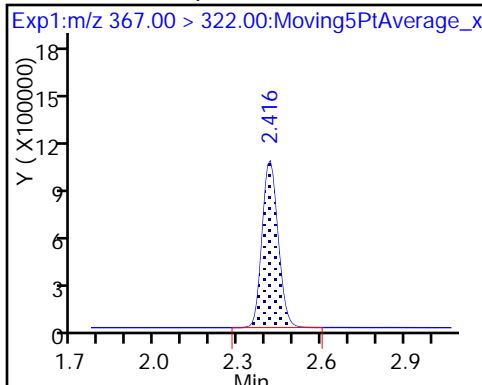
D 7 13C2 PFHxA



D 9 13C4-PFHpA

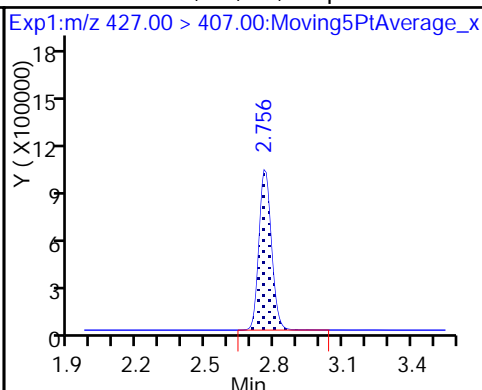
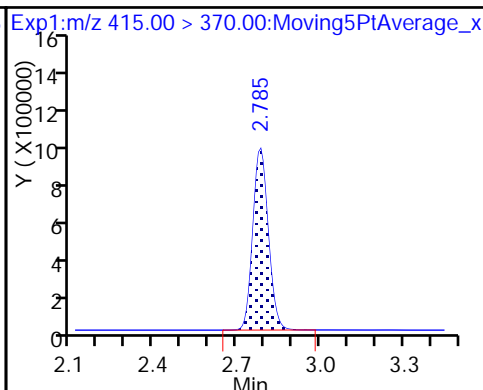
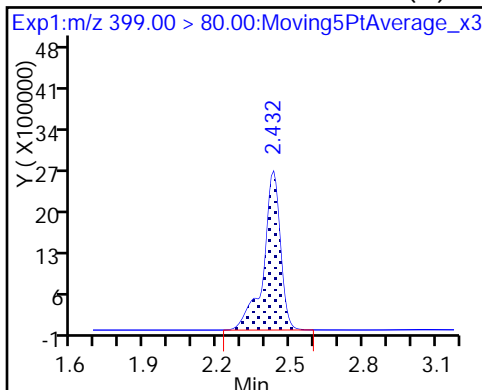
10 Perfluoroheptanoic acid

D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid (M) * 62 13C2-PFOA

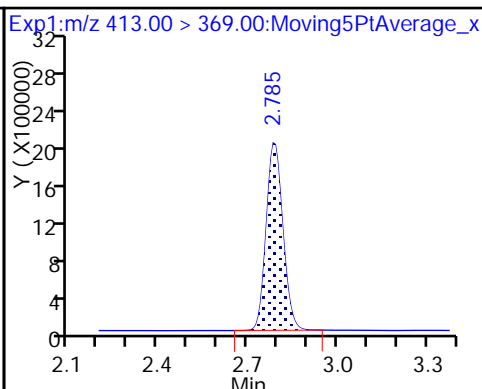
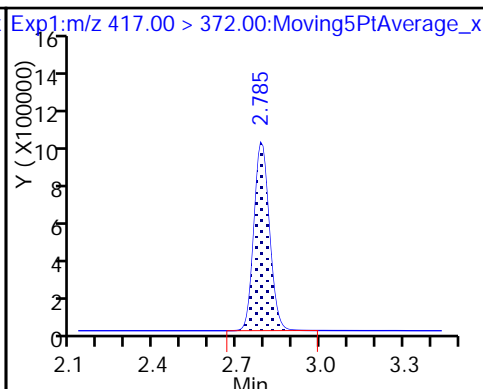
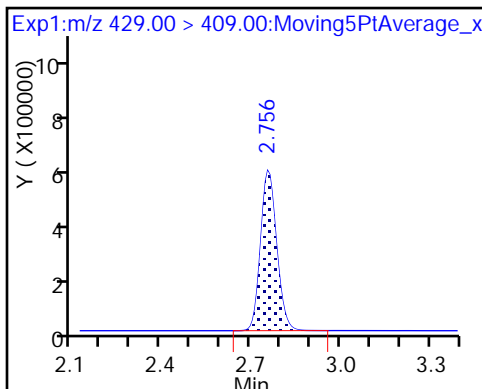
13 Sodium 1H,1H,2H,2H-perfluorooctane



D 12 M2-6:2FTS

D 14 13C4 PFOA

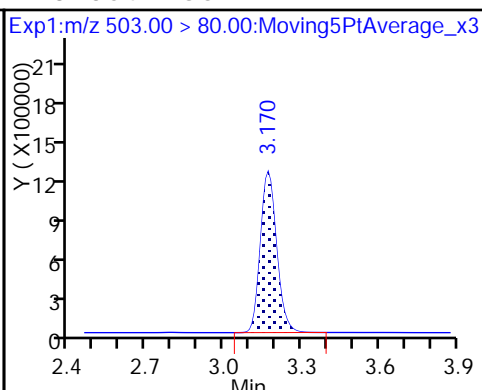
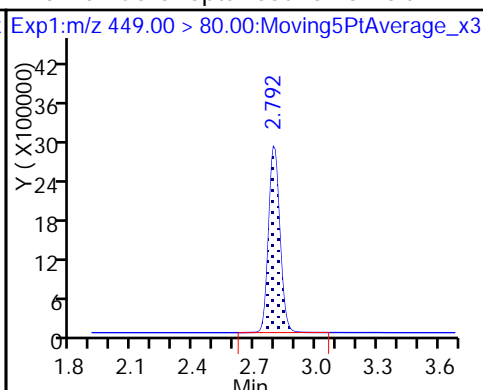
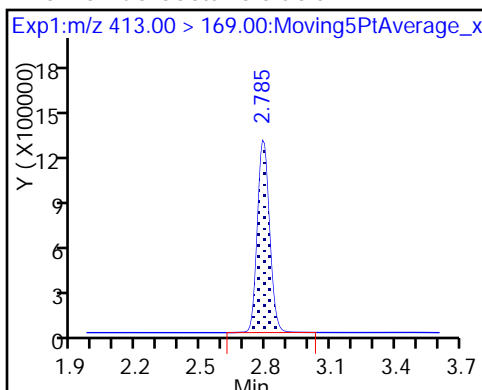
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

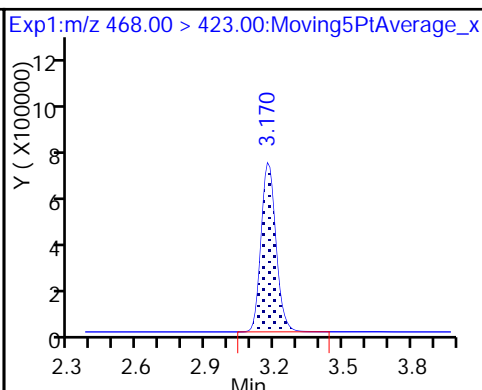
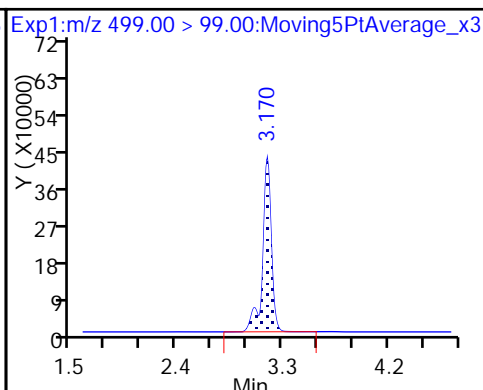
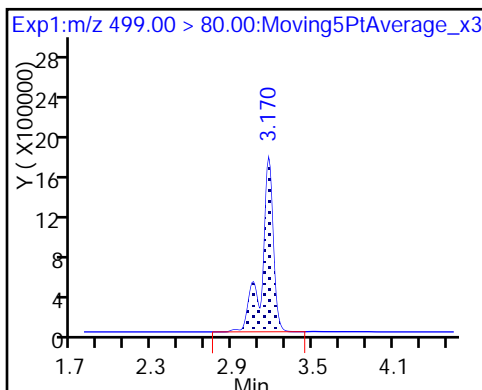
D 18 13C4 PFOS

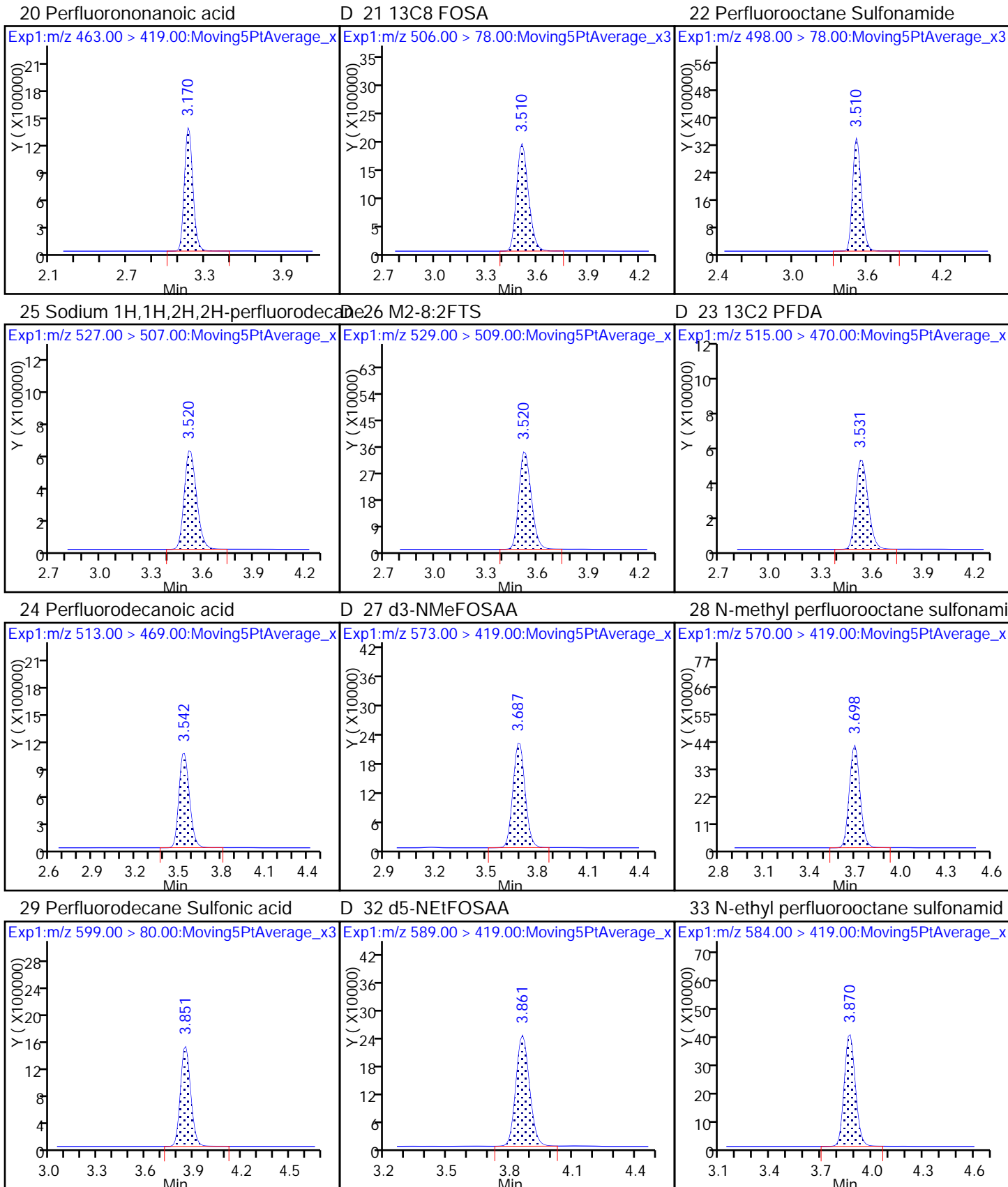


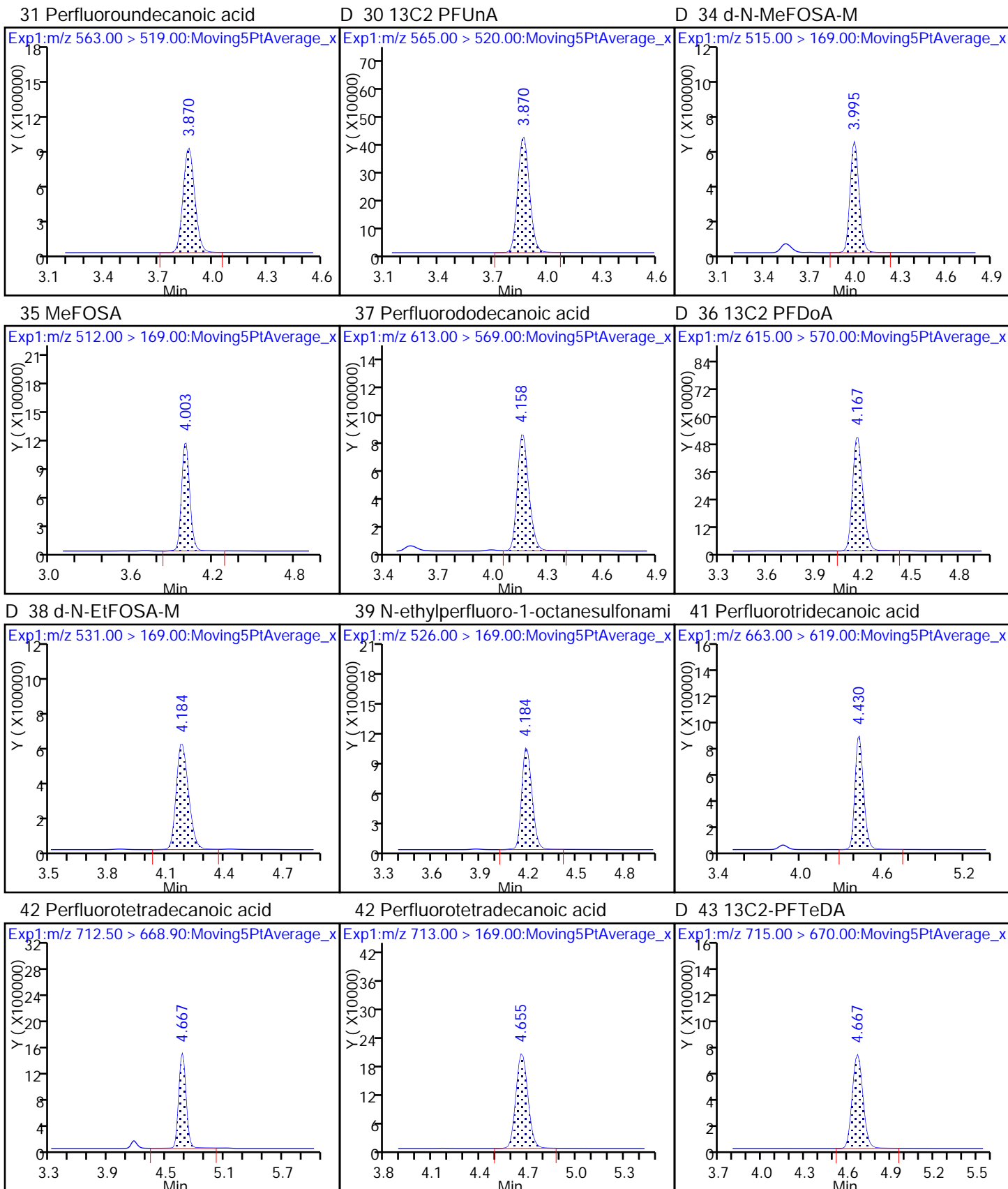
17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA



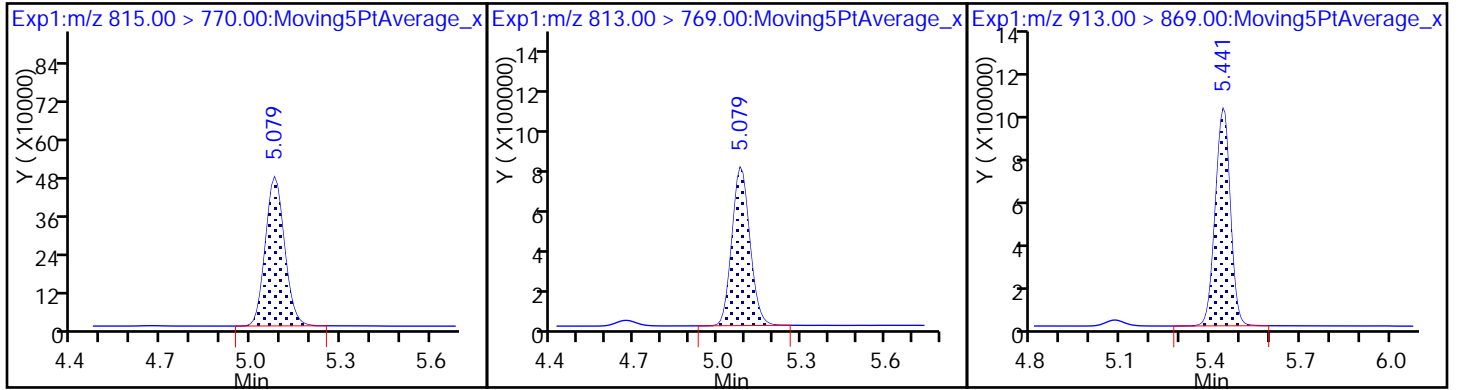




D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento

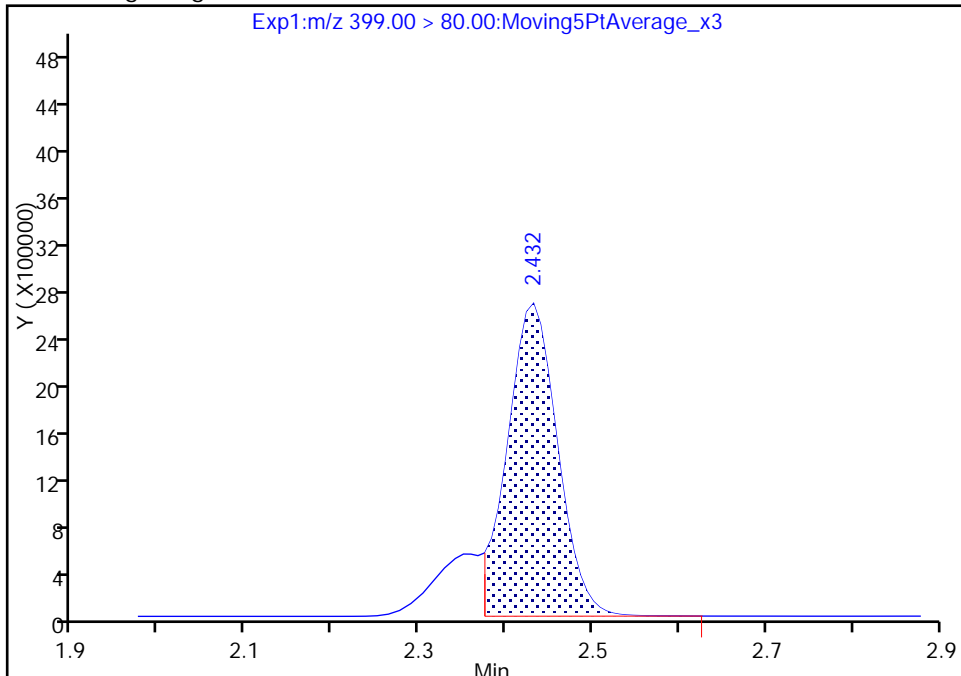
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Injection Date: 23-Jul-2017 13:44:37 Instrument ID: A8_N
Lims ID: IC L6 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

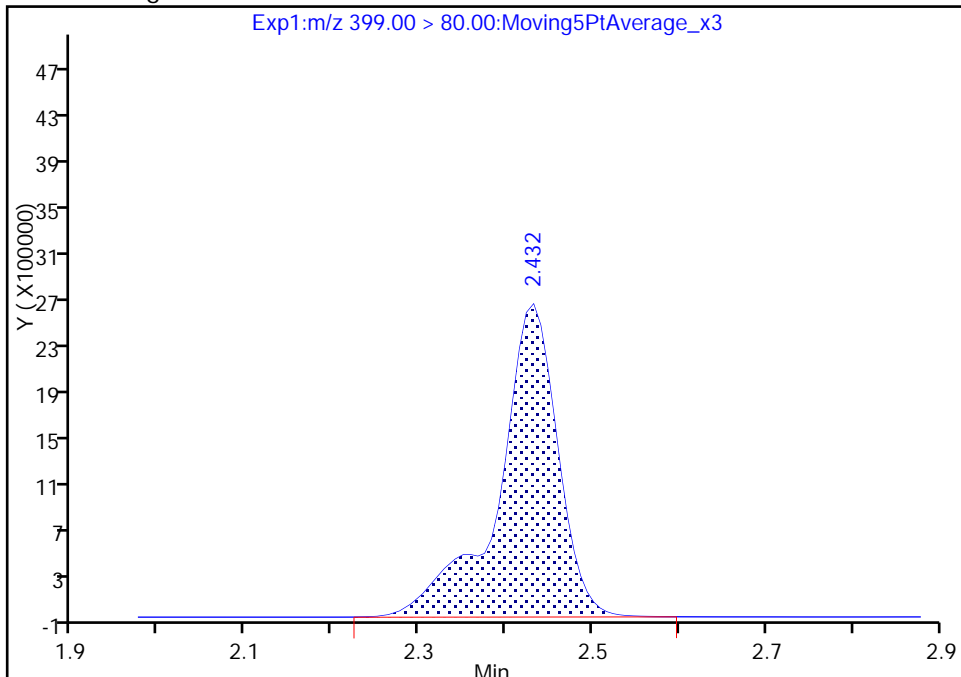
RT: 2.43
Area: 10537173
Amount: 76.645731
Amount Units: ng/ml

Processing Integration Results



RT: 2.43
Area: 12621118
Amount: 85.772175
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 23-Jul-2017 15:04:02
Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_009.d
 Lims ID: IC L7 Full
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 23-Jul-2017 13:51:31 ALS Bottle#: 34 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L7-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 11:24:49 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 15:04:48

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.554 | 1.558 | -0.004 | 7209685 | 46.2 | | 92.4 | 32425 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.563 | 1.564 | -0.001 | 1.000 | 21295694 | 167.4 | 83.7 | 8551 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.773 | 1.780 | -0.007 | 4874149 | 44.1 | | 88.2 | 54522 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.782 | 1.783 | -0.001 | 1.000 | 17506811 | 172.3 | 86.2 | 9880 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.800 | 1.806 | -0.006 | 126192 | NC | | | 5807 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.800 | 1.808 | -0.008 | 1.000 | 26901153 | 138.2 | 78.2 | 11804 | |
| | 298.90 > 99.00 | 1.800 | 1.808 | -0.008 | 1.000 | 13510276 | 1.99(0.00-0.00) | 78.2 | 14172 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.017 | 2.026 | -0.009 | 1.000 | 7430551 | 162.3 | 86.9 | 82822 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.063 | 2.070 | -0.007 | 4793468 | 47.4 | | 94.8 | 36476 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.063 | 2.070 | -0.007 | 1.000 | 16363337 | 179.3 | 89.6 | 25354 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.407 | 2.420 | -0.013 | 1.000 | 14130024 | 187.9 | 94.0 | 18386 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.407 | 2.420 | -0.013 | 3662996 | 43.7 | | 87.4 | 24696 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.423 | 2.436 | -0.013 | 1.000 | 23173026 | 163.9 | 90.1 | 9313 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.423 | 2.436 | -0.013 | 6181226 | 45.0 | | 95.1 | 32925 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|--------|
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.777 | 2.740 | 0.037 | 3259895 | 50.0 | | 24671 | |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.748 | 2.766 | -0.018 | 2239134 | 47.1 | | 99.1 | 28626 |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.748 | 2.766 | -0.018 | 1.000 | 6779939 | 160.6 | 84.7 | 54846 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.777 | 2.793 | -0.016 | 3327722 | 40.5 | | 81.0 | 27412 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.784 | 2.794 | -0.010 | 1.000 | 13780241 | 194.1 | 97.0 | 2429 |
| | 413.00 | > 169.00 | 2.784 | 2.794 | -0.010 | 1.000 | 8800027 | 1.57(0.90-1.10) | 97.0 | 14415 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.791 | 2.801 | -0.010 | 1.000 | 20645661 | 172.0 | 90.3 | 47341 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.160 | 3.176 | -0.016 | 1.000 | 20749676 | 183.4 | 98.8 | 245338 |
| | 499.00 | > 99.00 | 3.160 | 3.176 | -0.016 | 1.000 | 4386746 | 4.73(0.90-1.10) | 98.8 | 10185 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.160 | 3.176 | -0.016 | 5116508 | 47.3 | | 98.9 | 11239 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.169 | 3.180 | -0.011 | 1.000 | 10926680 | 187.7 | 93.8 | 15520 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.169 | 3.180 | -0.011 | 2859301 | 43.5 | | 87.0 | 17124 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.499 | 3.505 | -0.007 | 8798953 | 48.1 | | 96.3 | 13132 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.508 | 3.508 | 0.0 | 1.000 | 26444981 | 166.6 | 83.3 | 14219 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.518 | 3.528 | -0.010 | 1732871 | 47.5 | | 99.1 | 21862 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.518 | 3.528 | -0.010 | 1.000 | 5538945 | 168.1 | 87.7 | 13805 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.529 | 3.539 | -0.010 | 2614091 | 46.8 | | 93.6 | 8168 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.529 | 3.542 | -0.013 | 1.000 | 9589389 | 187.2 | 93.6 | 12458 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.684 | 3.698 | -0.014 | 1133763 | 52.2 | | 104 | 4945 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.684 | 3.701 | -0.017 | 1.000 | 4177961 | 202.5 | 101 | 9249 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.841 | 3.855 | -0.014 | 1.000 | 12396187 | 186.0 | 96.5 | 22600 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.851 | 3.866 | -0.015 | 1056852 | 48.2 | | 96.4 | 2864 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.861 | 3.875 | -0.014 | 1818459 | 44.6 | | 89.3 | 15052 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.861 | 3.875 | -0.014 | 1.000 | 7069518 | 189.4 | 94.7 | 12087 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.861 | 3.875 | -0.014 | 1.003 | 3541684 | 197.4 | 98.7 | 13669 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.989 | 3.986 | 0.003 | 2520018 | 53.5 | 107 | 793 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.989 | 3.992 | -0.003 | 1.000 | 9209985 | 199.0 | 99.5 | 9902 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.147 | 4.168 | -0.021 | 1.000 | 8087946 | 208.5 | 104 | 2669 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.147 | 4.169 | -0.022 | | 2087489 | 46.7 | 93.5 | 6305 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.174 | 4.173 | 0.001 | | 2573945 | 52.7 | 105 | 3970 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.174 | 4.178 | -0.004 | 1.000 | 9600643 | 201.1 | 101 | 11981 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.411 | 4.434 | -0.023 | 1.000 | 6846516 | 192.6 | 96.3 | 2458 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.654 | 4.676 | -0.022 | | 3714139 | 45.7 | 91.5 | 13860 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.654 | 4.676 | -0.022 | 1.000 | 13936575 | 173.7 | 86.8 | 1109 |
| | 713.00 | > 169.00 | 4.642 | 4.676 | -0.034 | 0.997 | 1837255 | 7.59(0.00-0.00) | 86.8 | 12455 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.058 | 5.091 | -0.033 | | 1923205 | 46.6 | 93.1 | 4558 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.058 | 5.092 | -0.034 | 1.000 | 6735864 | 203.1 | 102 | 864 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.422 | 5.458 | -0.036 | 1.000 | 6388834 | 200.0 | 100 | 1930 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULLL-L7_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_009.d

Injection Date: 23-Jul-2017 13:51:31

Instrument ID: A8_N

Lims ID: IC L7 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 34

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

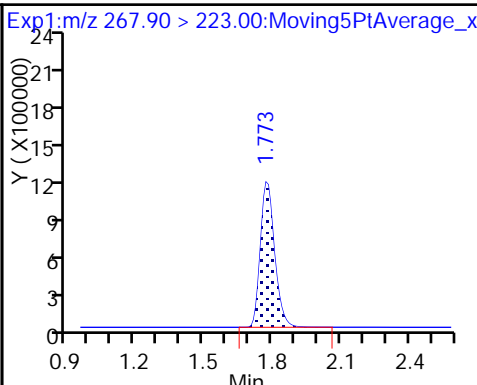
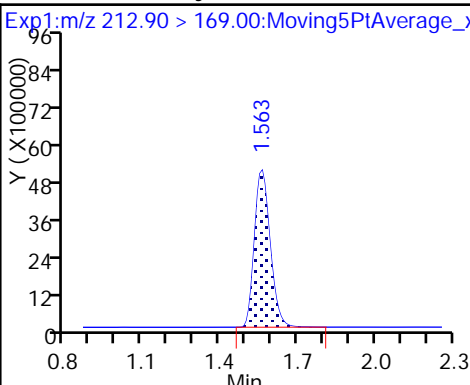
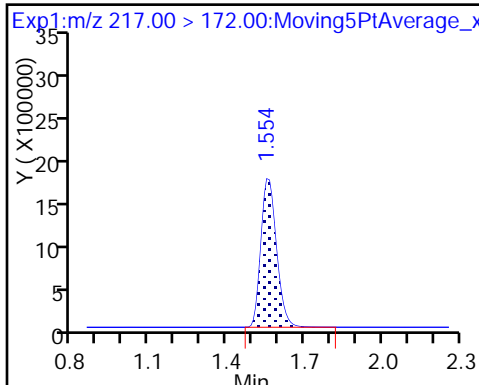
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

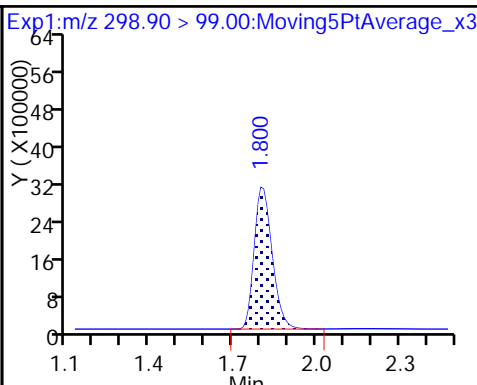
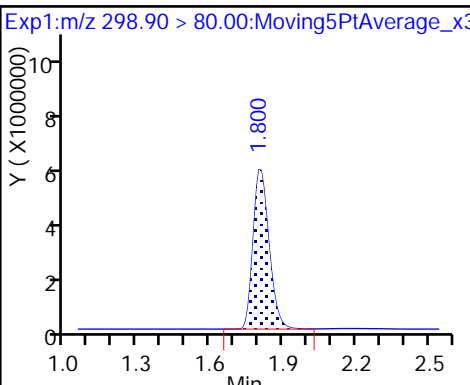
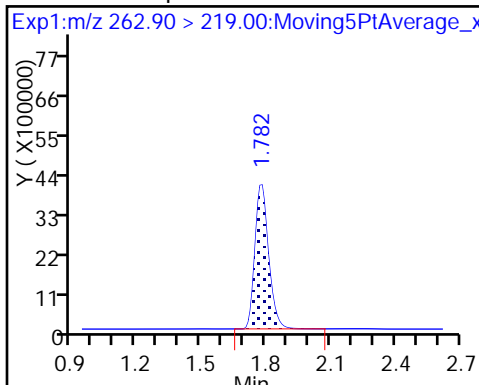
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

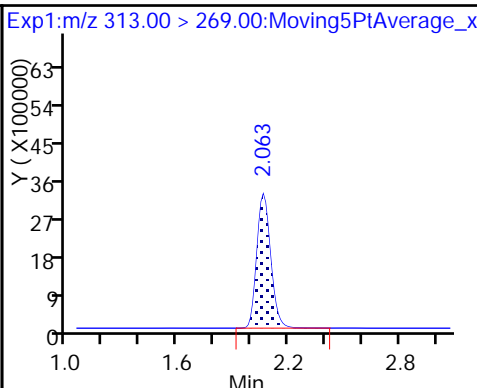
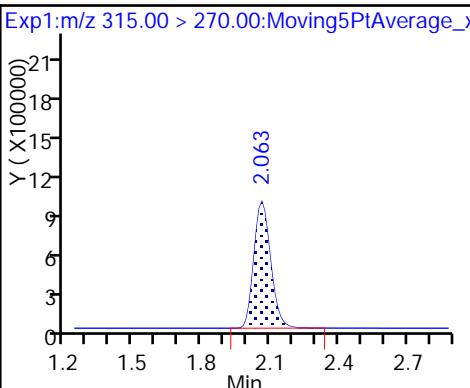
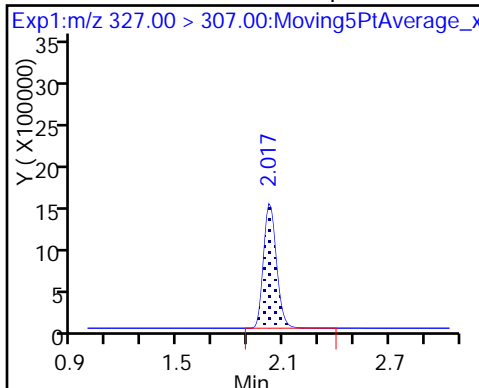
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

D 7 13C2 PFHxA

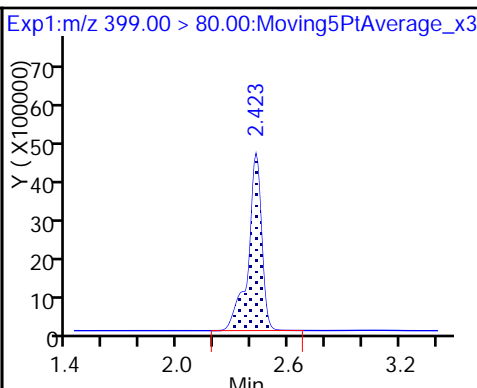
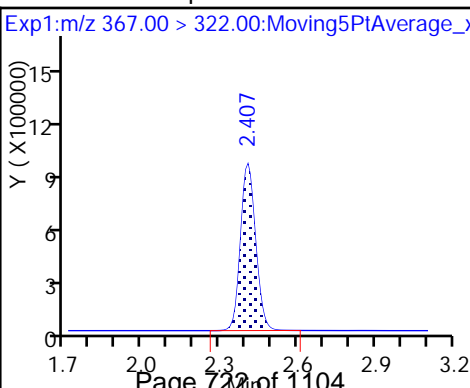
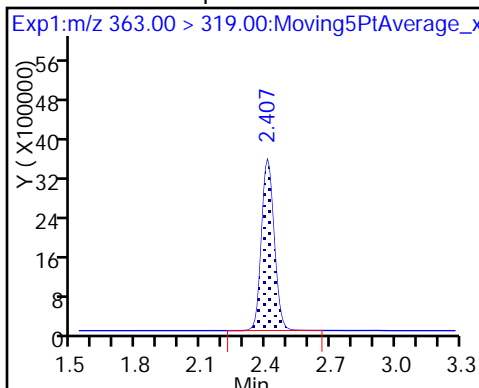
6 Perfluorohexanoic acid



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

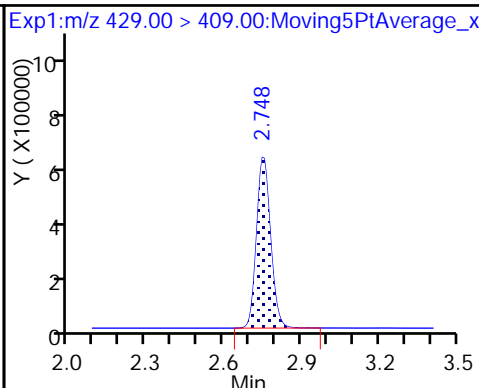
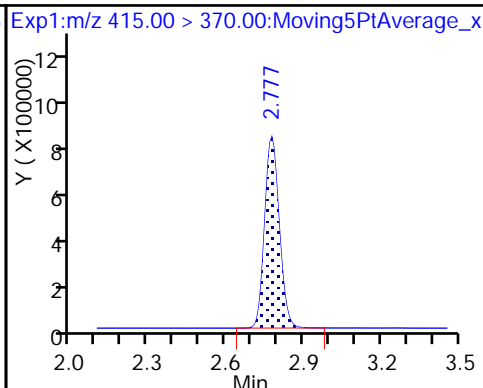
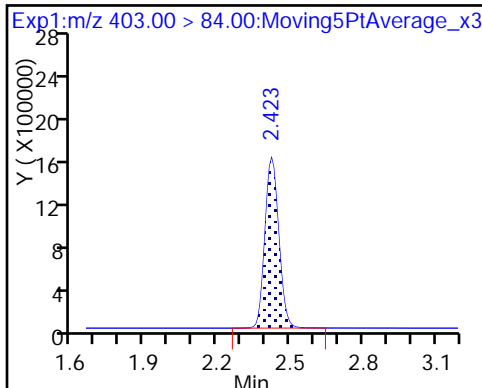
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

* 62 13C2-PFOA

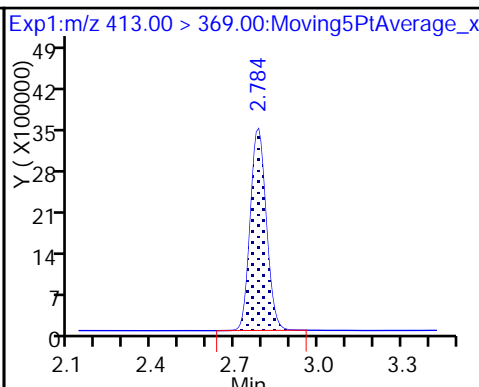
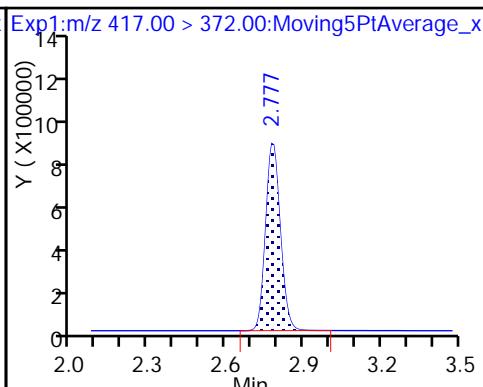
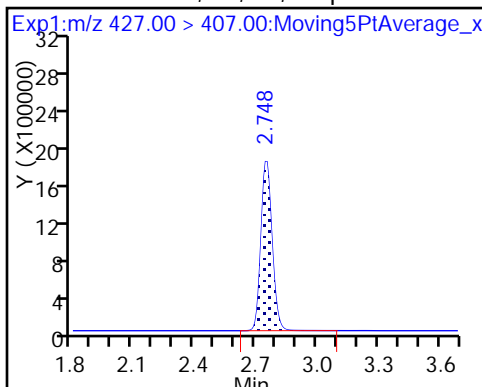
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctadecanoic acid

D 14 13C4 PFOA

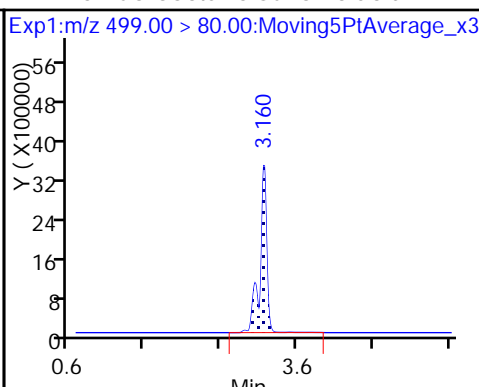
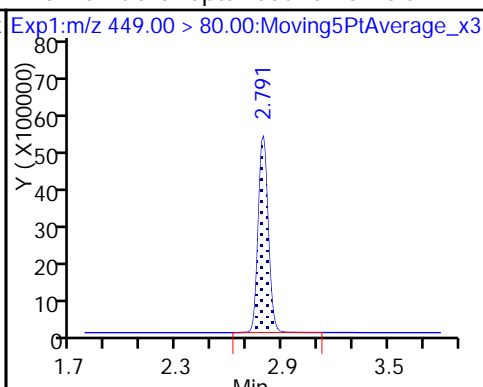
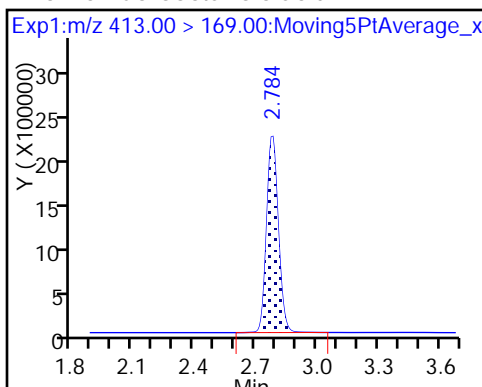
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

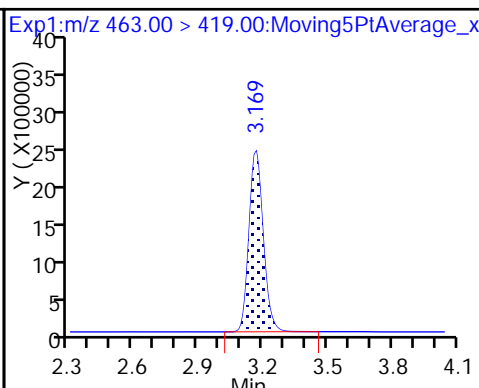
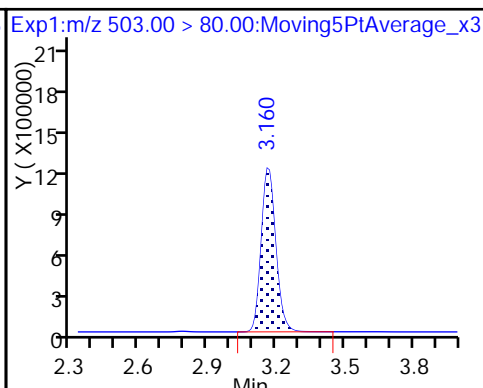
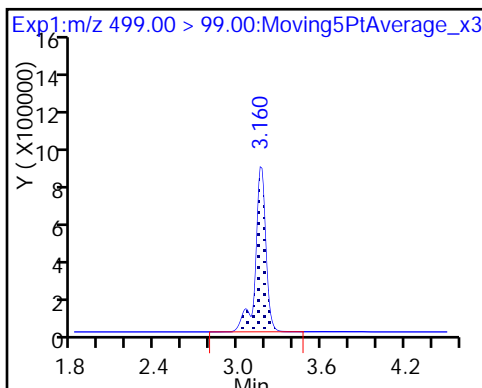
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 18 13C4 PFOS

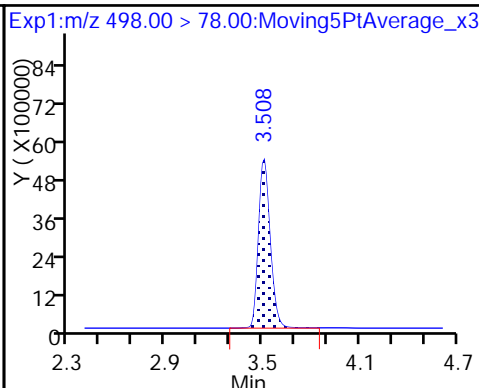
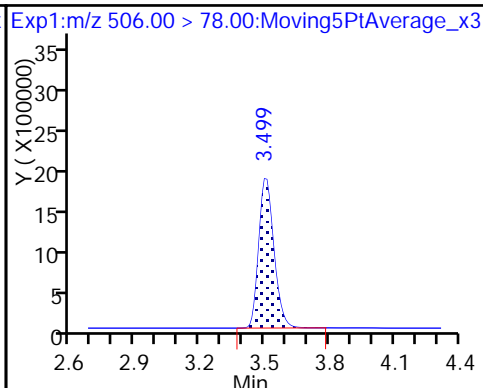
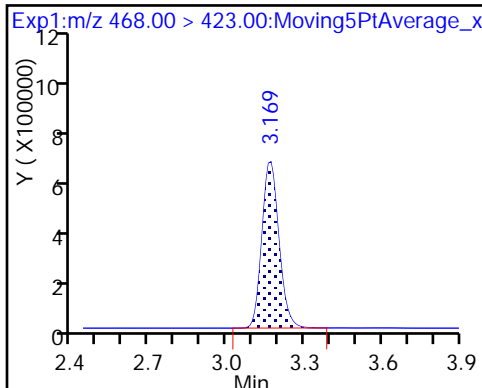
20 Perfluorononanoic acid



D 19 13C5 PFNA

D 21 13C8 FOSA

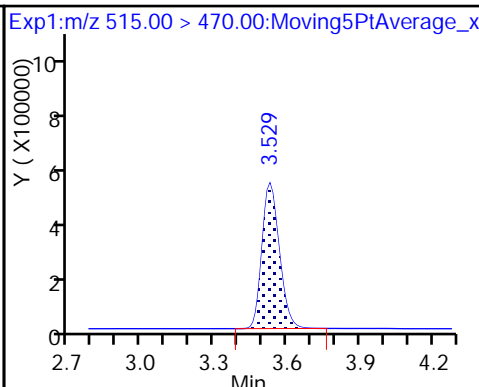
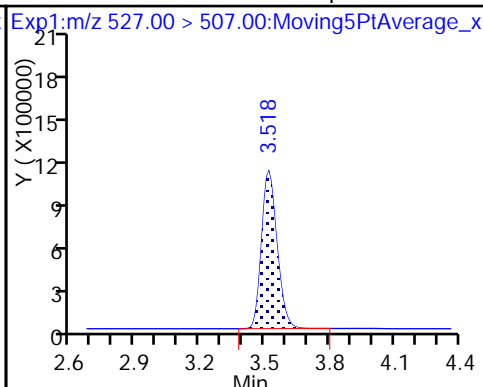
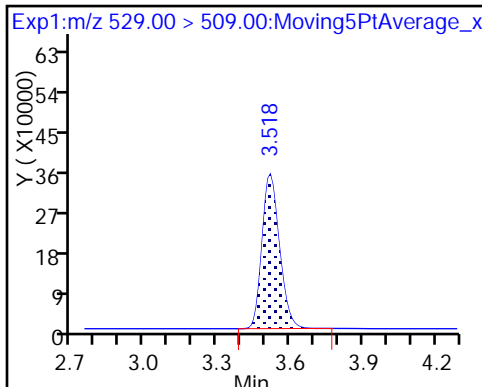
22 Perfluorooctane Sulfonamide



D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

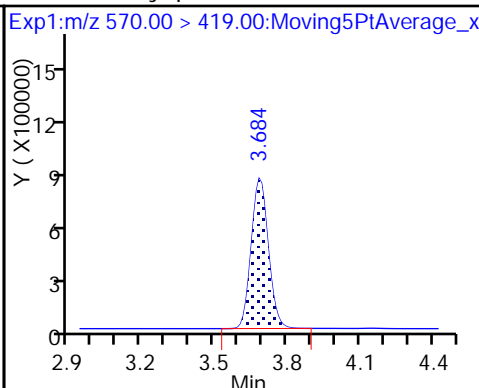
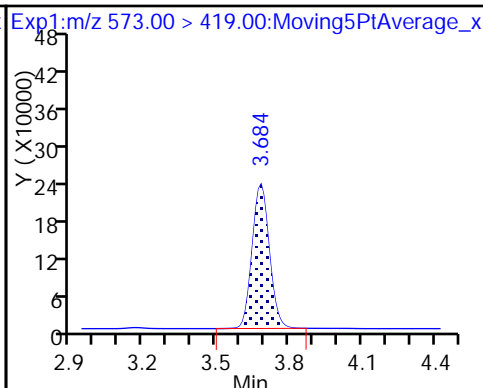
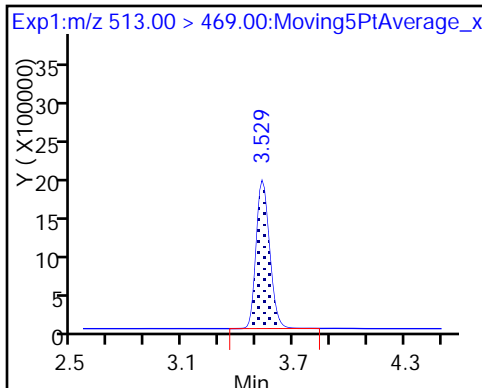
De23 13C2 PFDA



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

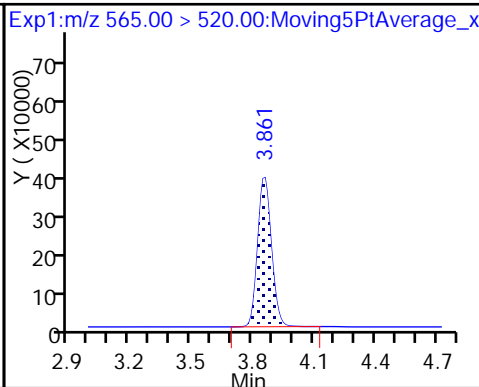
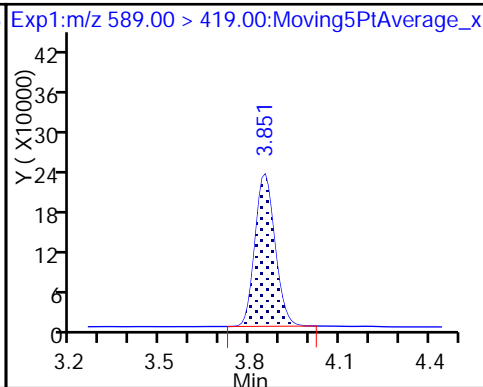
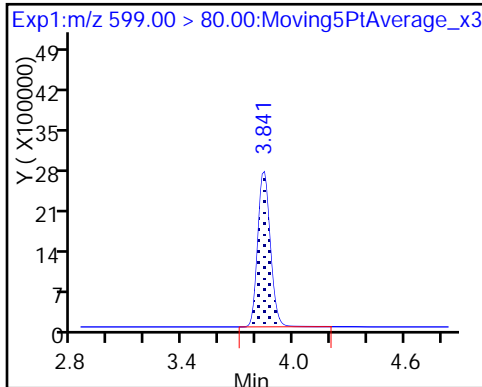
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

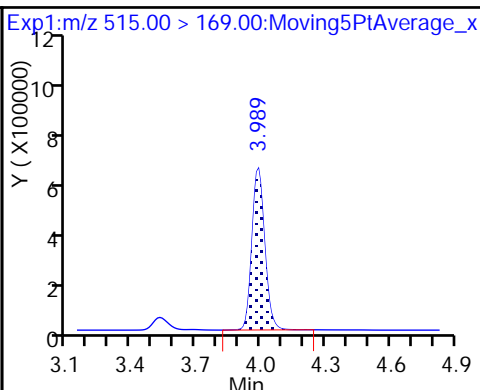
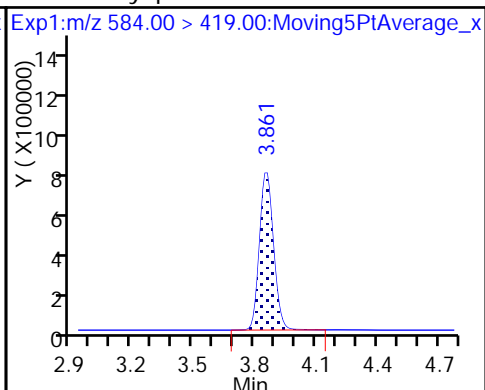
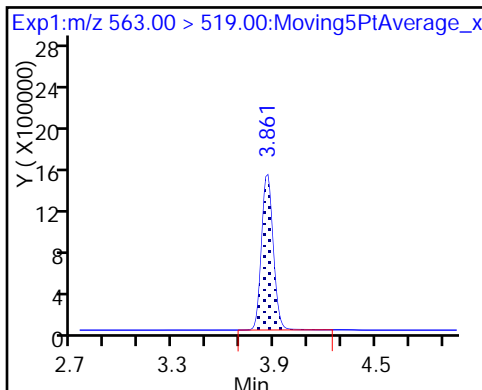
D 30 13C2 PFUnA



31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid D

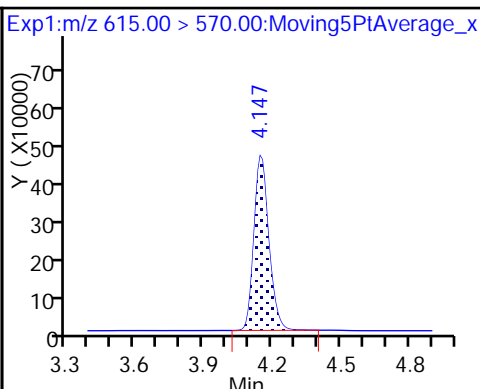
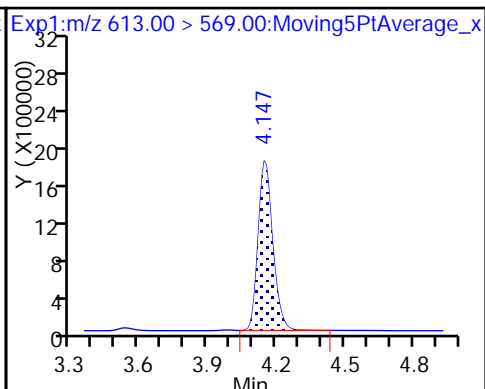
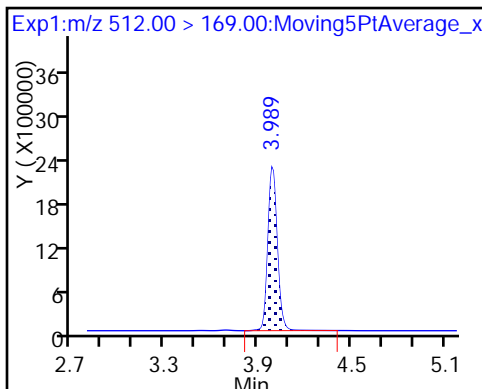
34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

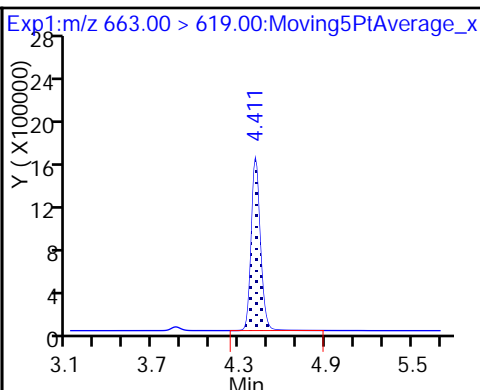
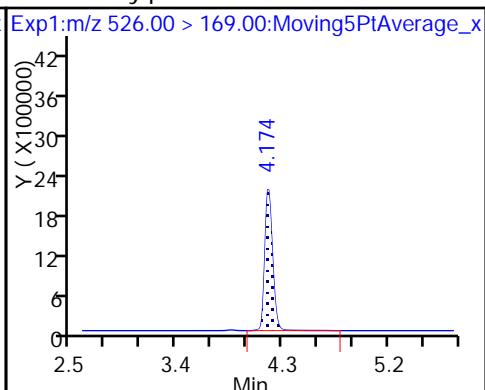
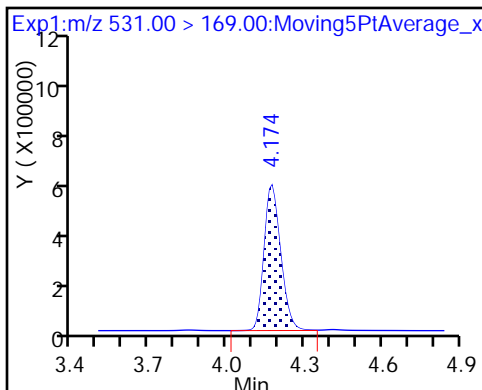
D 36 13C2 PFDaA



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

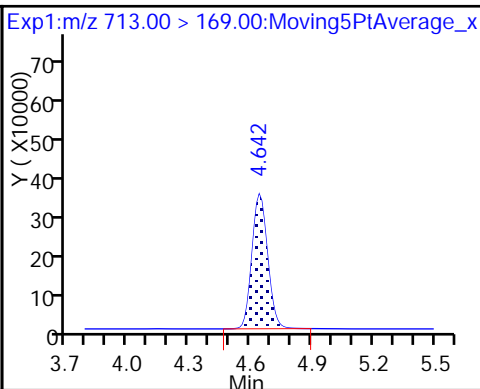
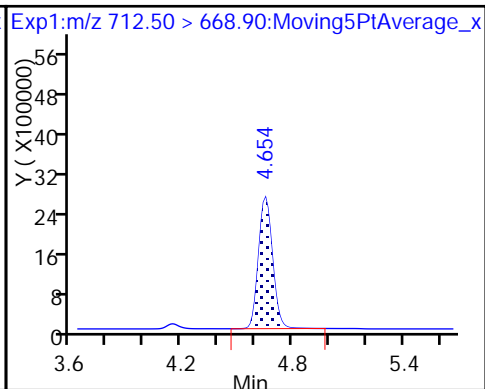
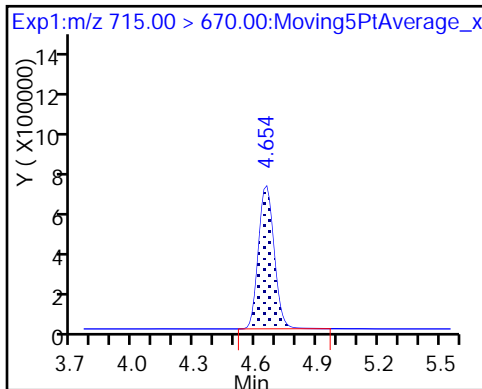
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

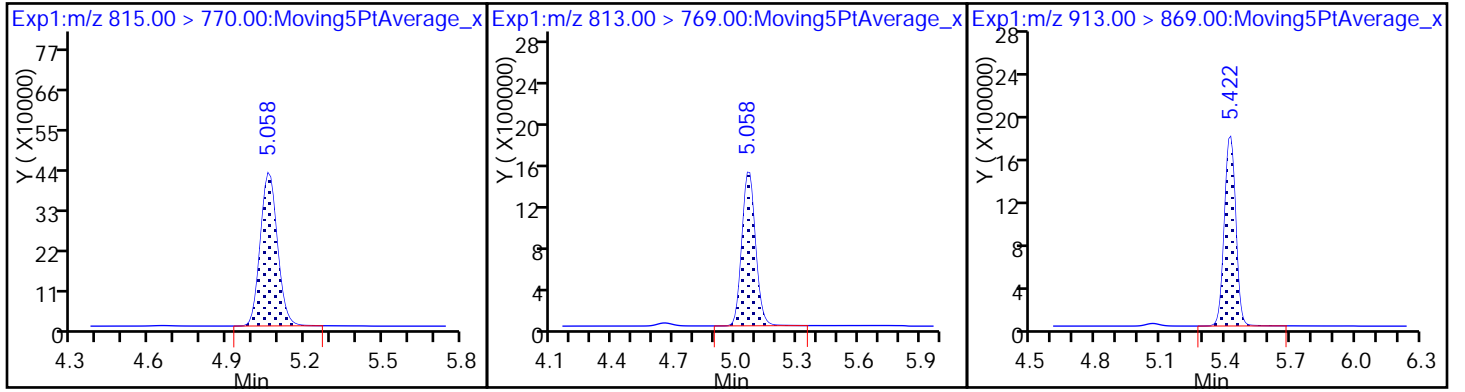
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Lims ID: IC M2-4:2FTS
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 23-Jul-2017 13:58:26 ALS Bottle#: 37 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: M2:4-2FTS Calibration Std
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 11:24:52 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK004

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|-------|
| D 60 M2-4:2FTS | 329.00 > 309.00 | 2.009 | 2.009 | 0.0 | 3553057 | NC | | | 37245 | |
| * 62 13C2-PFOA | 415.00 > 370.00 | 2.751 | 2.740 | 0.011 | 6829938 | 50.0 | | | 35064 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCM2-4:2FTSIC_00002 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Injection Date: 23-Jul-2017 13:58:26

Instrument ID: A8_N

Lims ID: IC M2-4:2FTS

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 37 Worklist Smp#: 10

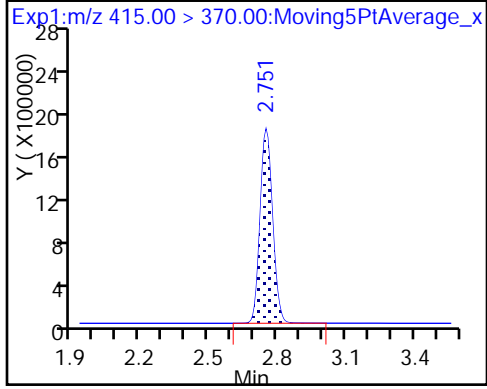
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

* 62 13C2-PFOA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: ICV 320-175252/12 Calibration Date: 07/20/2017 18:18
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.20ICAL_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.9107 | 0.9350 | | 50.8 | 49.5 | 2.7 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 0.997 | 1.081 | | 53.7 | 49.5 | 8.4 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.422 | 1.601 | | 49.3 | 43.8 | 12.6 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9374 | 1.040 | | 54.9 | 49.5 | 11.0 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.009 | 1.099 | | 53.9 | 49.5 | 8.9 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.023 | 1.070 | | 48.9 | 46.8 | 4.6 | 25.0 |
| 6:2FTS | AveID | 0.8582 | 0.9405 | | 51.4 | 46.9 | 9.6 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.046 | 1.133 | | 53.6 | 49.5 | 8.3 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.174 | 1.228 | | 49.3 | 47.1 | 4.7 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.000 | 1.056 | | 52.3 | 49.5 | 5.6 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.034 | 0.9896 | | 45.2 | 47.3 | -4.3 | 25.0 |
| 8:2FTS | AveID | 0.9182 | 0.9403 | | 48.6 | 47.4 | 2.4 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9235 | 0.9705 | | 52.0 | 49.5 | 5.1 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9359 | 0.9767 | | 51.7 | 49.5 | 4.4 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9079 | 0.9670 | | 52.7 | 49.5 | 6.5 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6369 | 0.6599 | | 49.5 | 47.8 | 3.6 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8499 | 0.8856 | | 51.6 | 49.5 | 4.2 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.039 | | 51.0 | 49.5 | 3.0 | 25.0 |
| MeFOSA | AveID | 0.8961 | 0.9655 | | 53.3 | 49.5 | 7.7 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9442 | 1.017 | | 53.3 | 49.5 | 7.8 | 25.0 |
| N-EtFOSA-M | AveID | 0.9273 | 1.032 | | 55.1 | 49.5 | 11.3 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8512 | 0.9449 | | 55.0 | 49.5 | 11.0 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.947 | 2.005 | | 51.0 | 49.5 | 3.0 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.9234 | | 53.0 | 49.5 | 7.1 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.8788 | 0.9130 | | 51.4 | 49.5 | 3.9 | 25.0 |
| 13C4 PFBA | Ave | 179976 | 178028 | | 49.0 | 49.5 | -1.1 | 50.0 |
| 13C5 PFPeA | Ave | 119573 | 116570 | | 48.3 | 49.5 | -2.5 | 50.0 |
| 13C2 PFHxA | Ave | 110403 | 106759 | | 47.9 | 49.5 | -3.3 | 50.0 |
| 13C4-PFHpA | Ave | 97315 | 95437 | | 48.5 | 49.5 | -1.9 | 50.0 |
| 18O2 PFHxS | Ave | 160345 | 155563 | | 45.4 | 46.8 | -3.0 | 50.0 |
| M2-6:2FTS | Ave | 52582 | 50555 | | 45.2 | 47.0 | -3.9 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: ICV 320-175252/12 Calibration Date: 07/20/2017 18:18
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.20ICAL_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 87797 | 83504 | | 47.1 | 49.5 | -4.9 | 50.0 |
| 13C4 PFOS | Ave | 118039 | 113145 | | 45.4 | 47.3 | -4.1 | 50.0 |
| 13C5 PFNA | Ave | 69282 | 65202 | | 46.6 | 49.5 | -5.9 | 50.0 |
| 13C8 FOSA | Ave | 196294 | 177132 | | 44.7 | 49.5 | -9.8 | 50.0 |
| M2-8:2FTS | Ave | 39250 | 37570 | | 45.4 | 47.4 | -4.3 | 50.0 |
| 13C2 PFDA | Ave | 60512 | 57778 | | 47.3 | 49.5 | -4.5 | 50.0 |
| d3-NMeFOSAA | Ave | 21953 | 21994 | | 49.6 | 49.5 | 0.2 | 50.0 |
| 13C2 PFUnA | Ave | 41991 | 38026 | | 44.8 | 49.5 | -9.4 | 50.0 |
| d5-NEtFOSAA | Ave | 22991 | 21543 | | 46.4 | 49.5 | -6.3 | 50.0 |
| d-N-MeFOSA-M | Ave | 50429 | 49400 | | 48.5 | 49.5 | -2.0 | 50.0 |
| 13C2 PFDoA | Ave | 43561 | 39439 | | 44.8 | 49.5 | -9.5 | 50.0 |
| d-N-EtFOSA-M | Ave | 50912 | 49235 | | 47.9 | 49.5 | -3.3 | 50.0 |
| 13C2-PFTeDA | Ave | 81327 | 74098 | | 45.1 | 49.5 | -8.9 | 50.0 |
| 13C2-PFHxDA | Ave | 42486 | 39580 | | 46.1 | 49.5 | -6.8 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_012.d
 Lims ID: ICV Full
 Client ID:
 Sample Type: ICV
 Inject. Date: 20-Jul-2017 18:18:05 ALS Bottle#: 36 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 21-Jul-2017 11:40:38 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:49:20

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.556 | 1.545 | 0.011 | 8813264 | 49.0 | | 98.9 | 34103 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.556 | 1.549 | 0.007 | 1.000 | 8240708 | 50.8 | | 4157 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.766 | 1.752 | 0.014 | 5770808 | 48.3 | | 97.5 | 50770 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.766 | 1.753 | 0.013 | 1.000 | 6239113 | 53.7 | | 3744 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.793 | 1.777 | 0.016 | 156817 | NC | | | 5996 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.793 | 1.779 | 0.014 | 1.000 | 10908930 | 49.3 | | 6294 | |
| | 298.90 > 99.00 | 1.793 | 1.779 | 0.014 | 1.000 | 4325560 | 2.52(0.00-0.00) | | 6198 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.998 | 1.985 | 0.013 | 1.000 | 2404696 | 49.0 | | 53447 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.043 | 2.024 | 0.019 | 1.000 | 5498841 | 54.9 | | 13545 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.043 | 2.024 | 0.019 | 5285090 | 47.9 | | 96.7 | 32582 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.373 | 2.354 | 0.019 | 4724582 | 48.5 | | 98.1 | 26643 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.373 | 2.355 | 0.018 | 1.000 | 5193783 | 53.9 | | 10229 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.389 | 2.369 | 0.020 | 1.000 | 7790314 | 48.9 | | 6247 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.389 | 2.369 | 0.020 | 7285290 | 45.4 | | 97.0 | 50349 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|-------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.704 | 2.684 | 0.020 | 1.000 | 2231399 | 51.4 | | 39874 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.704 | 2.684 | 0.020 | | 2377567 | 45.2 | 96.1 | 33694 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.725 | 2.703 | 0.022 | | 4225024 | 49.5 | | 30691 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.732 | 2.706 | 0.026 | | 4133854 | 47.1 | 95.1 | 36271 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.732 | 2.710 | 0.022 | 1.000 | 4683927 | 53.6 | | 805 |
| | 413.00 | > 169.00 | 2.732 | 2.710 | 0.022 | 1.000 | 2838794 | | 1.65(0.90-1.10) | 9273 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.740 | 2.716 | 0.024 | 1.000 | 6549958 | 49.3 | | 49873 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.109 | 3.078 | 0.031 | | 5354775 | 45.4 | 95.9 | 20147 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.109 | 3.080 | 0.029 | | 3227838 | 46.6 | 94.1 | 21076 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.109 | 3.080 | 0.029 | 1.000 | 5293251 | 45.2 | | 14941 |
| | 499.00 | > 99.00 | 3.109 | 3.080 | 0.029 | 1.000 | 1220558 | | 4.34(0.90-1.10) | 7157 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.109 | 3.081 | 0.028 | 1.000 | 3407037 | 52.3 | | 6526 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.454 | 3.422 | 0.032 | 1.000 | 8510141 | 52.0 | | 17243 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.454 | 3.422 | 0.032 | | 8768935 | 44.7 | 90.2 | 14306 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.454 | 3.428 | 0.026 | 1.000 | 1675430 | 48.6 | | 18181 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.454 | 3.428 | 0.026 | | 1781774 | 45.4 | 95.7 | 17659 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.464 | 3.438 | 0.026 | 1.000 | 2793696 | 51.7 | | 7569 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.464 | 3.438 | 0.026 | | 2860308 | 47.3 | 95.5 | 11052 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.619 | 3.592 | 0.027 | | 1088809 | 49.6 | 100 | 7014 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.619 | 3.600 | 0.019 | 1.000 | 1052866 | 52.7 | | 7511 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.775 | 3.748 | 0.027 | 1.000 | 3567012 | 49.5 | | 12329 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.785 | 3.757 | 0.028 | | 1066501 | 46.4 | 93.7 | 2793 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.785 | 3.766 | 0.019 | 1.000 | 944465 | 51.6 | | 6426 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.785 | 3.766 | 0.019 | 1.000 | 1956055 | 51.0 | | 3004 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.785 | 3.766 | 0.019 | | 1882477 | 44.8 | 90.6 | 7017 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.938 | 3.910 | 0.028 | | 2445561 | | 48.5 | 98.0 | 831 |
| 35 MeFOSA | 512.00 > 169.00 | 3.946 | 3.916 | 0.030 | 1.000 | 2361297 | | 53.3 | | 6667 |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.081 | 4.059 | 0.022 | 1.000 | 1986401 | | 53.3 | | 1932 |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.081 | 4.059 | 0.022 | | 1952442 | | 44.8 | 90.5 | 4378 |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.124 | 4.095 | 0.029 | | 2437387 | | 47.9 | 96.7 | 4656 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.132 | 4.103 | 0.029 | 1.000 | 2514909 | | 55.1 | | 5869 |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.345 | 4.328 | 0.017 | 1.000 | 1844812 | | 55.0 | | 885 |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.584 | 4.566 | 0.018 | | 3668208 | | 45.1 | 91.1 | 10144 |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.584 | 4.567 | 0.017 | 1.000 | 3913682 | | 51.0 | | 385 |
| | 713.00 > 169.00 | 4.572 | 4.567 | 0.005 | 0.998 | 551630 | 7.09(0.00-0.00) | | | 4621 |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 4.987 | 4.976 | 0.011 | | 1959412 | | 46.1 | 93.2 | 3648 |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 4.987 | 4.979 | 0.008 | 1.000 | 1802859 | | 53.0 | | 298 |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.326 | 5.321 | 0.005 | 1.000 | 1782635 | | 51.4 | | 685 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_FULL_00003

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_012.d

Injection Date: 20-Jul-2017 18:18:05

Instrument ID: A8_N

Lims ID: ICV Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

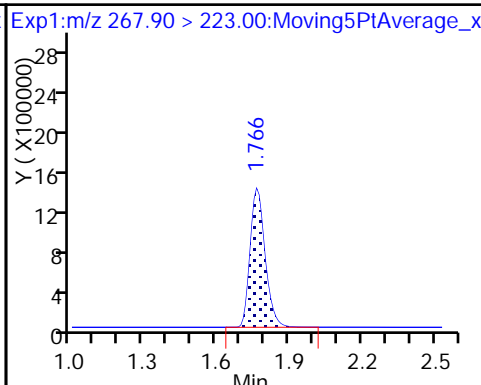
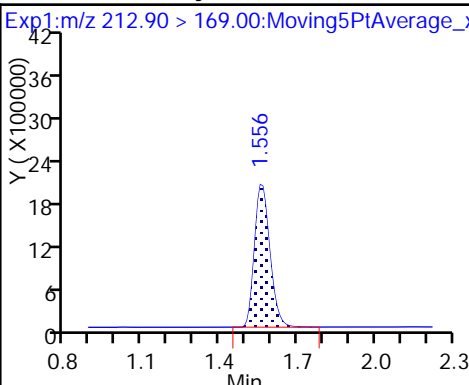
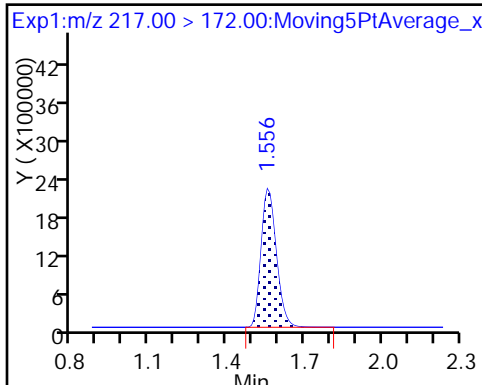
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

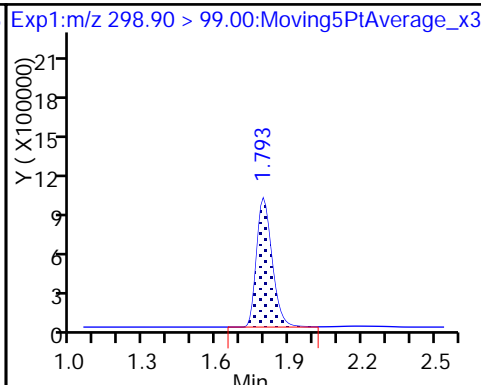
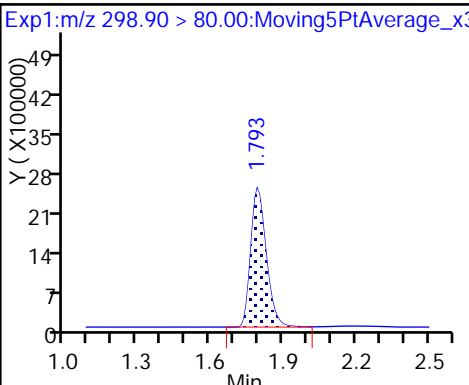
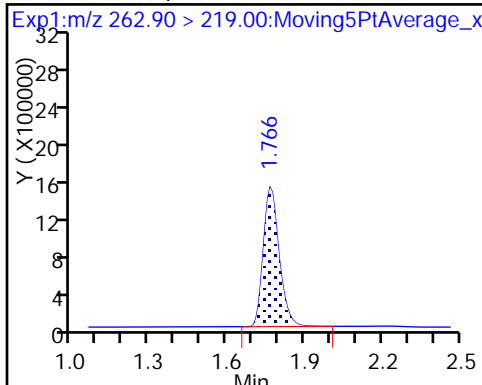
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

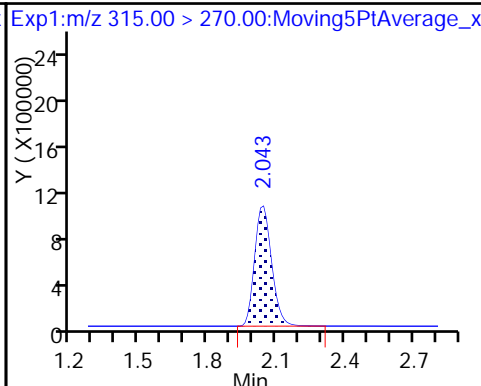
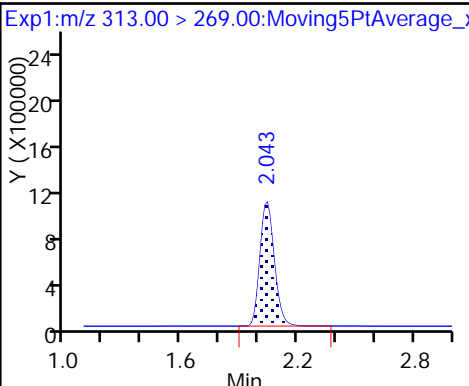
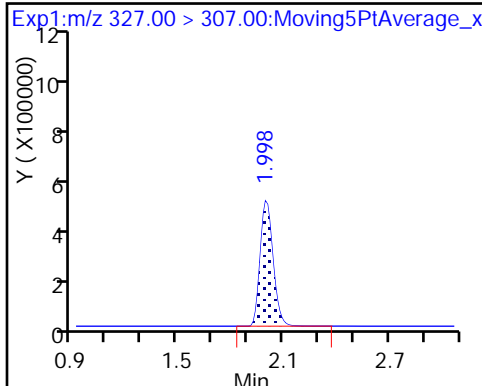
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

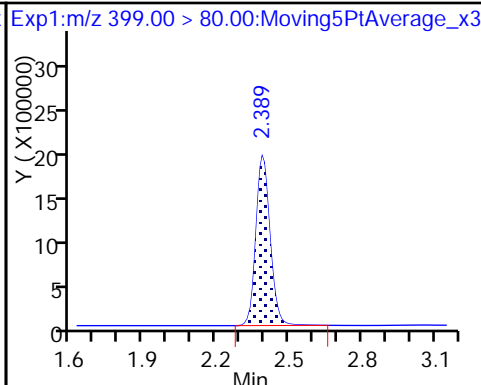
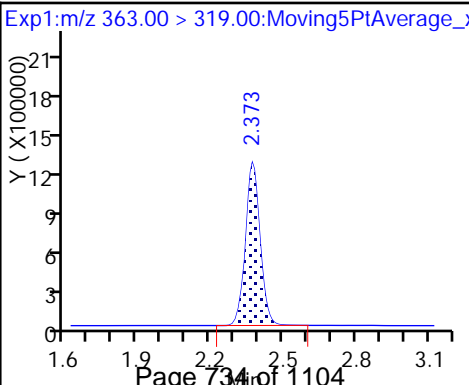
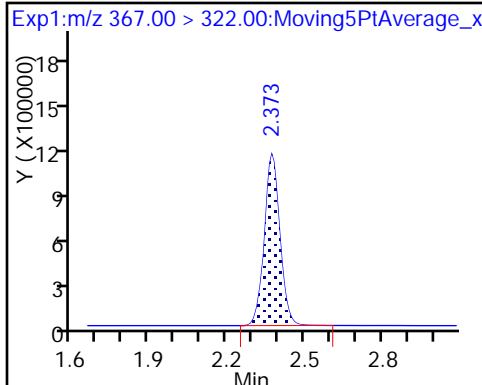
D 7 13C2 PFHxA



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

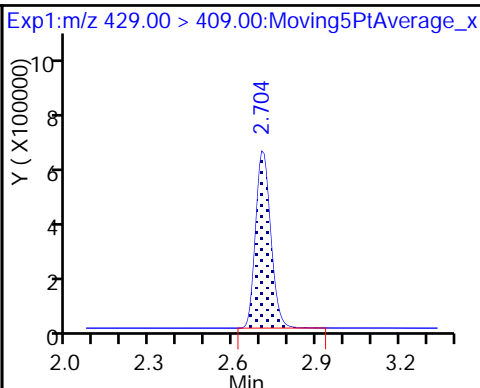
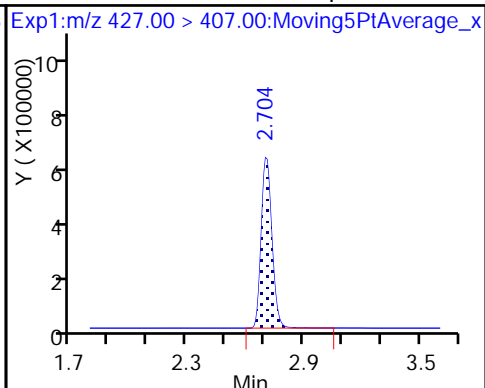
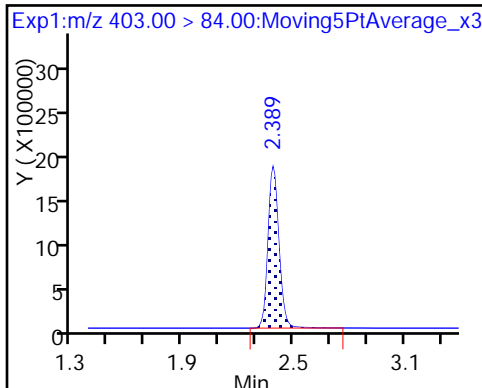
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecane

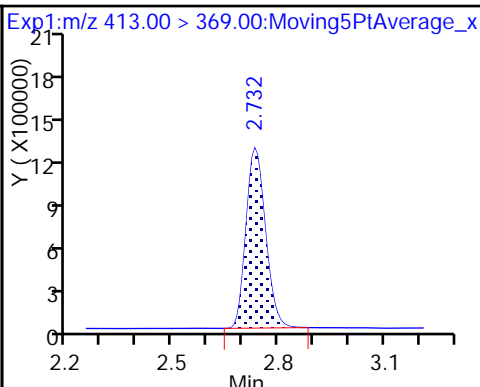
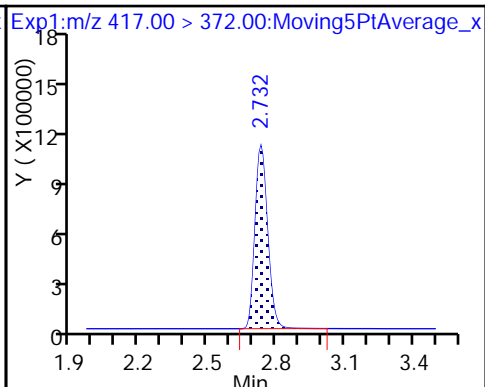
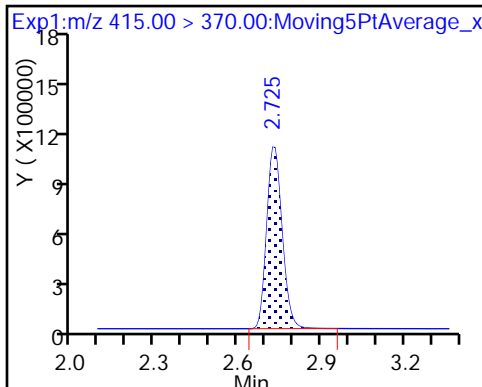
D 12 M2-6:2FTS



* 62 13C2-PFOA

D 14 13C4 PFOA

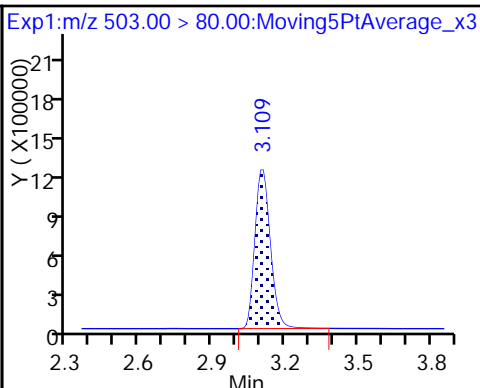
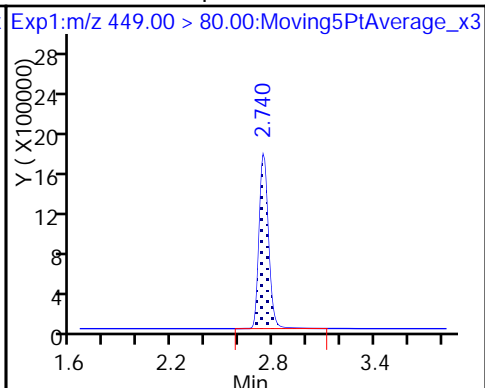
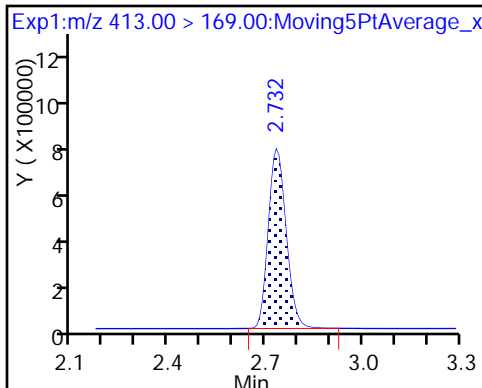
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

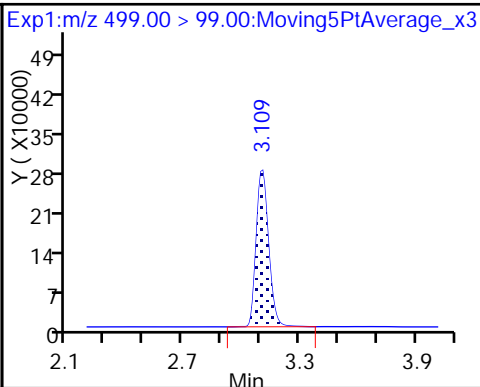
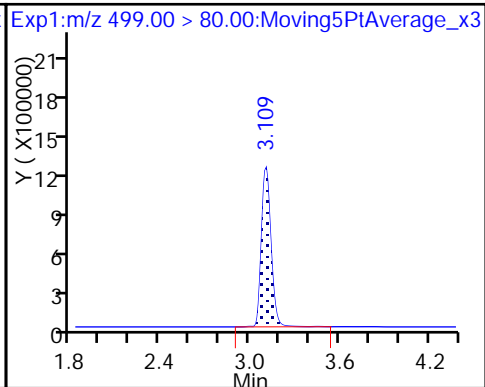
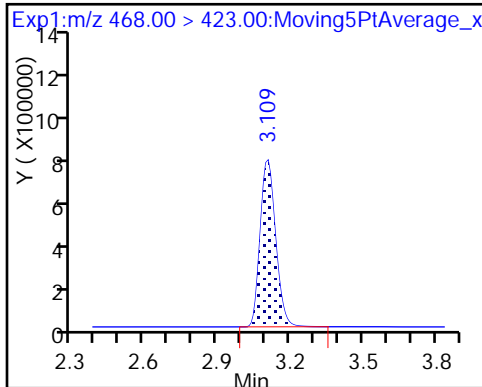
D 18 13C4 PFOS



D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid

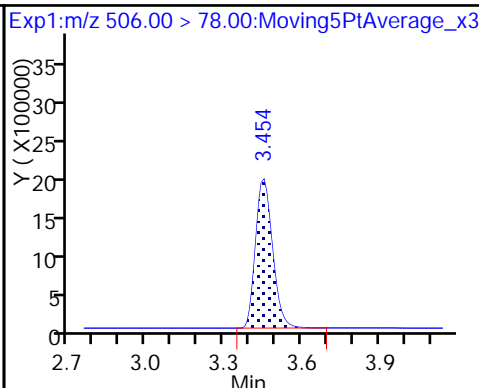
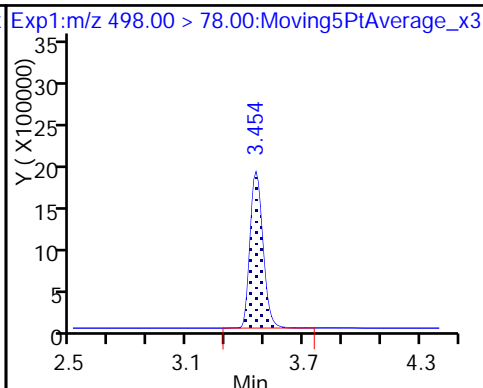
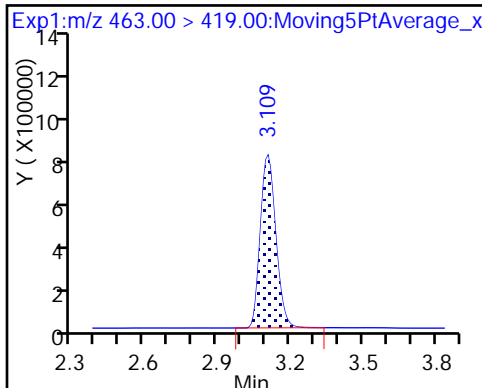
17 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid

22 Perfluorooctane Sulfonamide

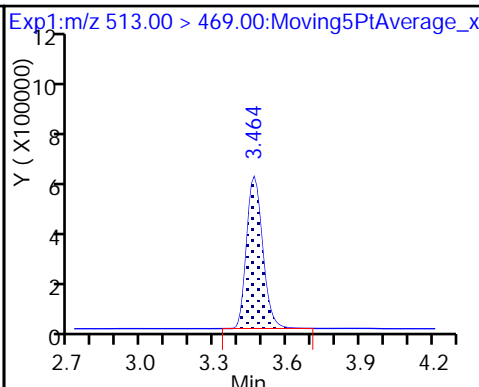
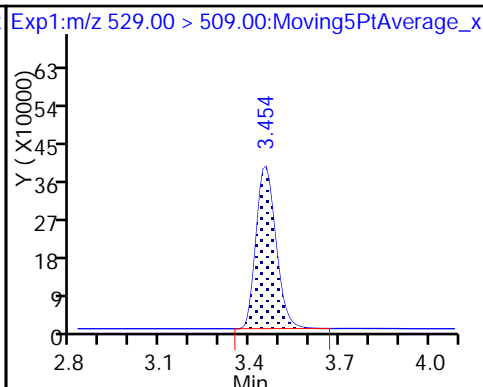
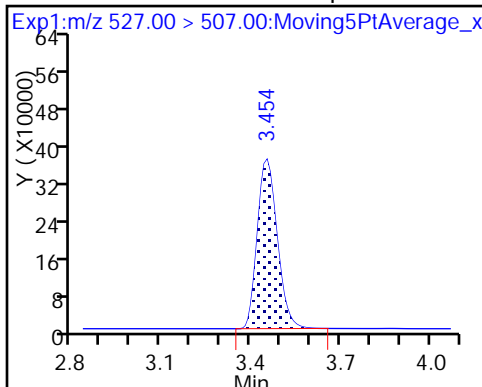
D 21 13C8 FOSA



25 Sodium 1H,1H,2H,2H-perfluorodeca

D26 M2-8:2FTS

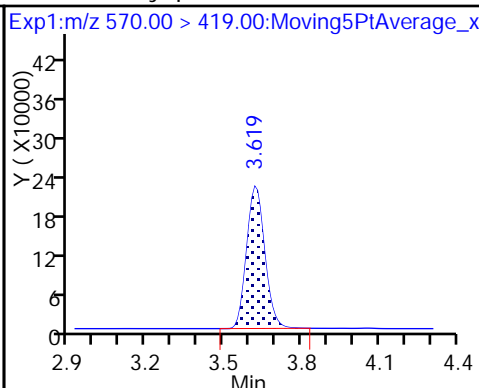
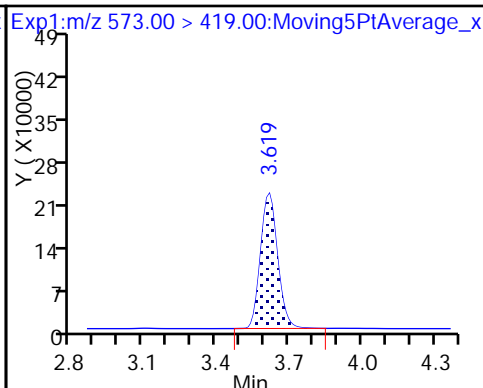
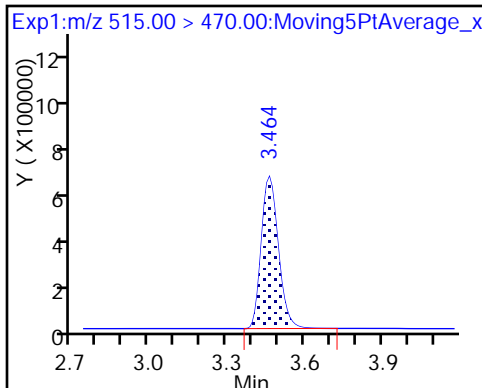
24 Perfluorodecanoic acid



D 23 13C2 PFDA

D 27 d3-NMeFOSAA

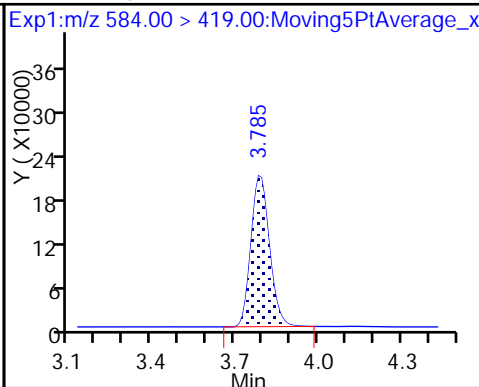
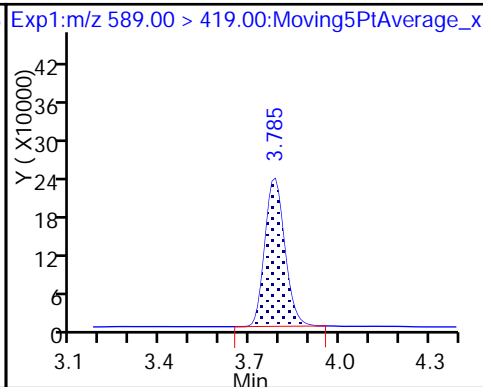
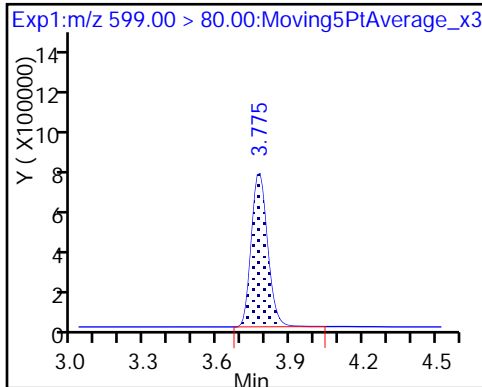
28 N-methyl perfluorooctane sulfonami

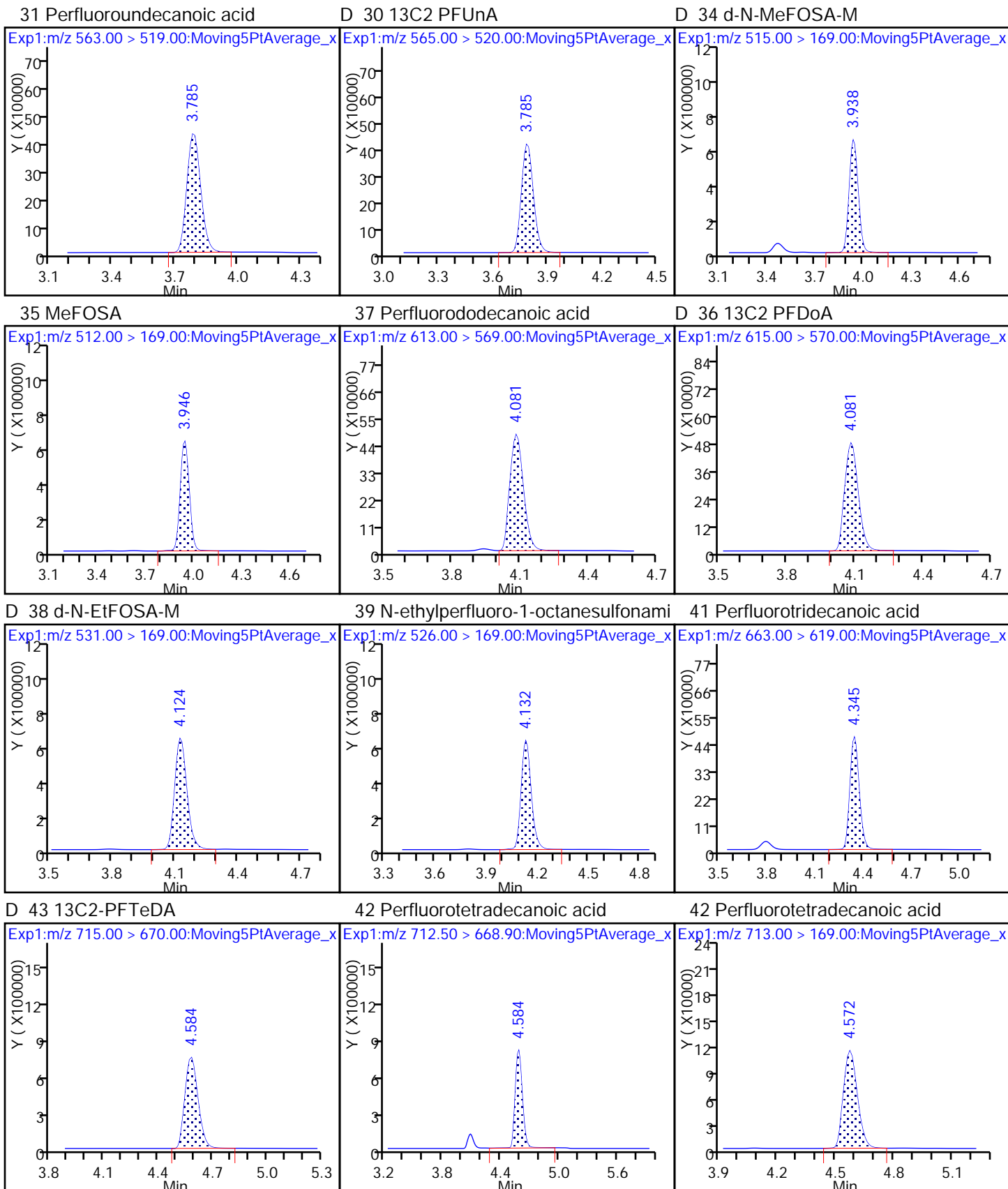


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamid

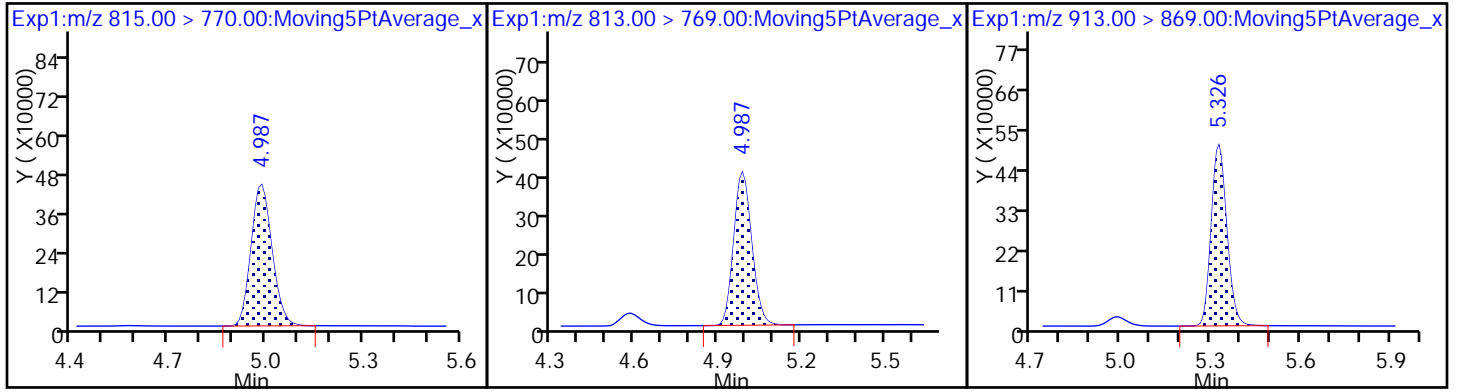




D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175391/2 Calibration Date: 07/21/2017 11:54
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21A_005.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.9107 | 0.8995 | | 0.988 | 1.00 | -1.2 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 0.997 | 1.133 | | 1.14 | 1.00 | 13.6 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.422 | 1.364 | | 0.848 | 0.884 | -4.0 | 50.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9374 | 1.007 | | 1.07 | 1.00 | 7.4 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.009 | 1.046 | | 1.04 | 1.00 | 3.7 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.023 | 1.141 | | 1.01 | 0.910 | 11.5 | 50.0 |
| 6:2FTS | AveID | 0.8582 | 0.9025 | | 0.997 | 0.948 | 5.2 | 50.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.046 | 1.063 | | 1.02 | 1.00 | 1.6 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.174 | 1.187 | | 0.962 | 0.952 | 1.1 | 50.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.000 | 0.9449 | | 0.945 | 1.00 | -5.5 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.034 | 1.053 | | 0.945 | 0.928 | 1.8 | 50.0 |
| 8:2FTS | AveID | 0.9182 | 1.018 | | 1.06 | 0.958 | 10.8 | 50.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9359 | 0.9908 | | 1.06 | 1.00 | 5.9 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9235 | 0.9134 | | 0.989 | 1.00 | -1.1 | 50.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9079 | 0.8950 | | 0.986 | 1.00 | -1.4 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6369 | 0.6395 | | 0.968 | 0.964 | 0.4 | 50.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8499 | 0.7960 | | 0.937 | 1.00 | -6.3 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.062 | | 0.872 | 1.00 | -12.8 | 50.0 |
| MeFOSA | AveID | 0.8961 | 0.8927 | | 0.996 | 1.00 | -0.4 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9442 | 1.001 | | 1.06 | 1.00 | 6.0 | 50.0 |
| N-EtFOSA-M | AveID | 0.9273 | 0.8998 | | 0.970 | 1.00 | -3.0 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8512 | 0.8216 | | 0.965 | 1.00 | -3.5 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.947 | 2.245 | | 1.15 | 1.00 | 15.3 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 1.269 | | 0.741 | 1.00 | -25.9 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.8788 | 0.6894 | | 0.784 | 1.00 | -21.6 | 50.0 |
| 13C4 PFBA | Ave | 179976 | 182006 | | 50.6 | 50.0 | 1.1 | 50.0 |
| 13C5 PFPeA | Ave | 119573 | 130340 | | 54.5 | 50.0 | 9.0 | 50.0 |
| 13C2 PFHxA | Ave | 110403 | 120169 | | 54.4 | 50.0 | 8.8 | 50.0 |
| 13C4-PFHpA | Ave | 97315 | 116627 | | 59.9 | 50.0 | 19.8 | 50.0 |
| 18O2 PFHxS | Ave | 160345 | 175831 | | 51.9 | 47.3 | 9.7 | 50.0 |
| M2-6:2FTS | Ave | 52582 | 56274 | | 50.8 | 47.5 | 7.0 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175391/2 Calibration Date: 07/21/2017 11:54
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21A_005.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 87797 | 106007 | | 60.4 | 50.0 | 20.7 | 50.0 |
| 13C4 PFOS | Ave | 118039 | 121001 | | 49.0 | 47.8 | 2.5 | 50.0 |
| 13C5 PFNA | Ave | 69282 | 84924 | | 61.3 | 50.0 | 22.6 | 50.0 |
| M2-8:2FTS | Ave | 39250 | 43515 | | 53.1 | 47.9 | 10.9 | 50.0 |
| 13C2 PFDA | Ave | 60512 | 71626 | | 59.2 | 50.0 | 18.4 | 50.0 |
| 13C8 FOSA | Ave | 196294 | 206709 | | 52.7 | 50.0 | 5.3 | 50.0 |
| d3-NMeFOSAA | Ave | 21953 | 26451 | | 60.2 | 50.0 | 20.5 | 50.0 |
| 13C2 PFUnA | Ave | 41991 | 54054 | | 64.4 | 50.0 | 28.7 | 50.0 |
| d5-NEtFOSAA | Ave | 22991 | 27935 | | 60.8 | 50.0 | 21.5 | 50.0 |
| d-N-MeFOSA-M | Ave | 50429 | 49501 | | 49.1 | 50.0 | -1.8 | 50.0 |
| 13C2 PFDoA | Ave | 43561 | 50612 | | 58.1 | 50.0 | 16.2 | 50.0 |
| d-N-EtFOSA-M | Ave | 50912 | 48873 | | 48.0 | 50.0 | -4.0 | 50.0 |
| 13C2-PFTeDA | Ave | 81327 | 95625 | | 58.8 | 50.0 | 17.6 | 50.0 |
| 13C2-PFHxDA | Ave | 42486 | 43502 | | 51.2 | 50.0 | 2.4 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170721-45739.b\2017.07.21A_005.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 21-Jul-2017 11:54:04 ALS Bottle#: 29 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170721-45739.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 21-Jul-2017 13:58:57 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 21-Jul-2017 13:54:37

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.534 | 1.521 | 0.013 | 9100308 | 50.6 | | 101 | 36152 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.534 | 1.530 | 0.004 | 163715 | 0.9877 | | 98.8 | 98.0 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.734 | 1.720 | 0.014 | 147687 | 1.14 | | 114 | 91.4 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.734 | 1.720 | 0.014 | 6517020 | 54.5 | | 109 | 61166 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.761 | 1.747 | 0.014 | 212076 | 0.8484 | | 96.0 | 176 | |
| | 298.90 > 99.00 | 1.761 | 1.747 | 0.014 | 83568 | | 2.54(0.00-0.00) | | 176 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.752 | 1.747 | 0.005 | 159121 | NC | | | 6403 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.958 | 1.952 | 0.006 | 52965 | 0.9703 | | 104 | 3594 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 1.992 | 1.986 | 0.006 | 120958 | 1.07 | | 107 | 302 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 1.992 | 1.986 | 0.006 | 6008426 | 54.4 | | 109 | 37667 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.314 | 2.305 | 0.009 | 122023 | 1.04 | | 104 | 330 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.314 | 2.305 | 0.009 | 5831374 | 59.9 | | 120 | 28513 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.330 | 2.321 | 0.009 | 182517 | 1.01 | | 111 | 231 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.330 | 2.321 | 0.009 | 8316790 | 51.9 | | 110 | 32438 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.638 | 2.630 | 0.008 | 1.000 | 48144 | 1.00 | 105 | 1637 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.638 | 2.630 | 0.008 | | 2672998 | 50.8 | 107 | 31529 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.667 | 2.651 | 0.015 | 1.000 | 112677 | 1.02 | 102 | 23.8 |
| | 413.00 | > 169.00 | 2.667 | 2.651 | 0.015 | 1.000 | 66919 | 1.68(0.90-1.10) | | 416 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.659 | 2.651 | 0.008 | | 5296324 | 50.0 | 100 | 28592 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.667 | 2.651 | 0.015 | | 5300361 | 60.4 | 121 | 30348 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.674 | 2.658 | 0.016 | 1.000 | 136677 | 0.9624 | 101 | 3746 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.031 | 3.021 | 0.010 | 1.000 | 80247 | 0.9449 | 94.5 | 177 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.031 | 3.021 | 0.010 | 1.000 | 118192 | 0.9446 | 102 | 1611 |
| | 499.00 | > 99.00 | 3.031 | 3.021 | 0.010 | 1.000 | 23893 | 4.95(0.90-1.10) | | 312 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.031 | 3.021 | 0.010 | | 5783825 | 49.0 | 103 | 28289 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.031 | 3.021 | 0.010 | | 4246207 | 61.3 | 123 | 22222 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.380 | 3.371 | 0.009 | 1.000 | 42422 | 1.06 | 111 | 1723 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.380 | 3.371 | 0.009 | | 2084367 | 53.1 | 111 | 25076 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.396 | 3.379 | 0.017 | 1.000 | 188815 | 0.9891 | 98.9 | 5078 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.396 | 3.379 | 0.017 | 1.000 | 70965 | 1.06 | 106 | 282 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.396 | 3.379 | 0.017 | | 3581323 | 59.2 | 118 | 13363 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.396 | 3.379 | 0.017 | | 10335463 | 52.7 | 105 | 46564 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.552 | 3.530 | 0.022 | | 1322558 | 60.2 | 120 | 9763 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.552 | 3.540 | 0.012 | 1.000 | 23674 | 0.9858 | 98.6 | 203 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.708 | 3.686 | 0.022 | 1.000 | 74588 | 0.9679 | 100 | 3359 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.718 | 3.696 | 0.022 | | 1396769 | 60.8 | 122 | 3198 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.718 | 3.706 | 0.012 | 1.000 | 57414 | 0.8722 | 87.2 | 126 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.718 | 3.706 | 0.012 | 1.000 | 22236 | 0.9365 | 93.7 | 533 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.718 | 3.706 | 0.012 | | 2702675 | 64.4 | 129 | 13205 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 35 MeFOSA | 512.00 > 169.00 | 3.903 | 3.883 | 0.020 | 1.000 | 44190 | 1.00 | 99.6 | 1651 | |
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.894 | 3.883 | 0.011 | | 2475025 | 49.1 | 98.2 | 1599 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.017 | 4.001 | 0.016 | 1.000 | 50655 | 1.06 | 106 | 59.9 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.017 | 4.001 | 0.016 | | 2530594 | 58.1 | 116 | 5895 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.080 | 4.066 | 0.014 | | 2443673 | 48.0 | 96.0 | 6029 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.088 | 4.075 | 0.013 | 1.000 | 43978 | 0.9704 | 97.0 | 1562 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.282 | 4.270 | 0.012 | 1.000 | 41583 | 0.9652 | 96.5 | 11.4 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.516 | 4.502 | 0.014 | 1.000 | 113626 | 1.15 | 115 | 37.1 | |
| | 713.00 > 169.00 | 4.507 | 4.502 | 0.005 | 0.998 | 13809 | 8.23(0.00-0.00) | | 450 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.516 | 4.502 | 0.014 | | 4781238 | 58.8 | 118 | 14024 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 4.929 | 4.902 | 0.027 | | 2175087 | 51.2 | 102 | 3468 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 4.929 | 4.912 | 0.017 | 1.000 | 64224 | 0.7414 | 74.1 | 9.2 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.263 | 5.246 | 0.017 | 1.000 | 34890 | 0.7845 | 78.4 | 13.4 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULLL-L2_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170721-45739.b\2017.07.21A_005.d

Injection Date: 21-Jul-2017 11:54:04

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

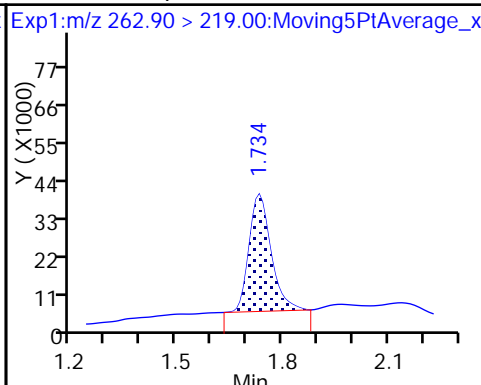
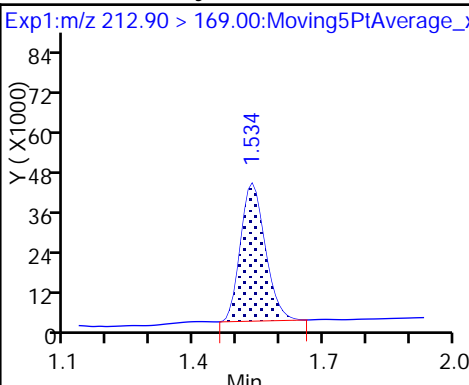
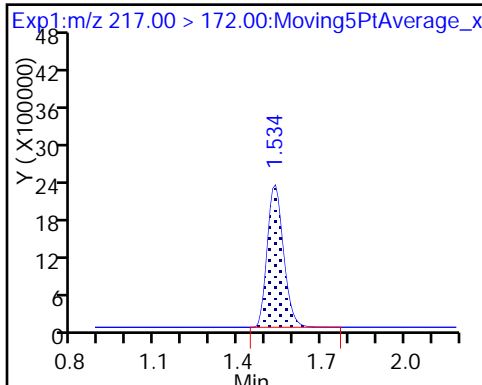
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

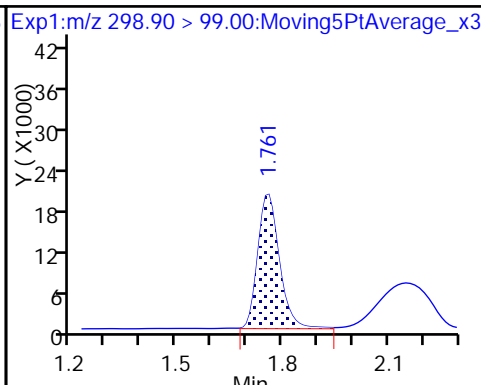
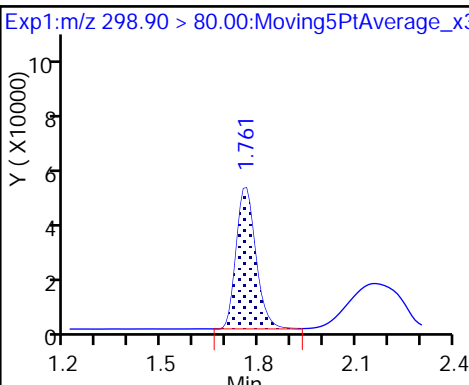
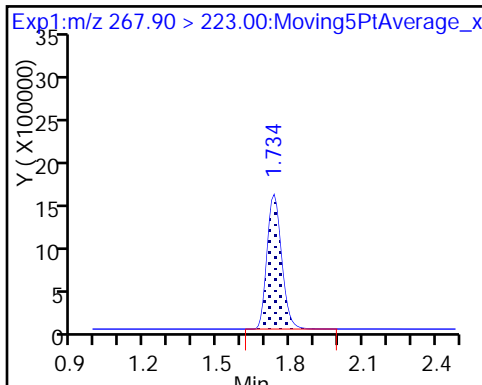
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

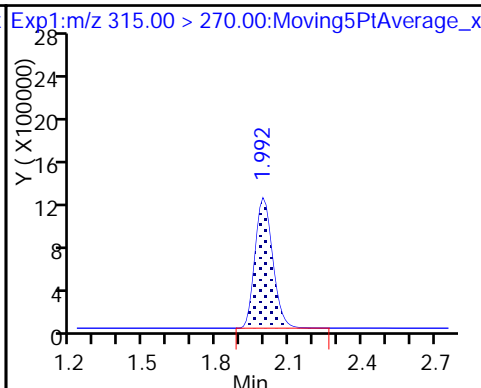
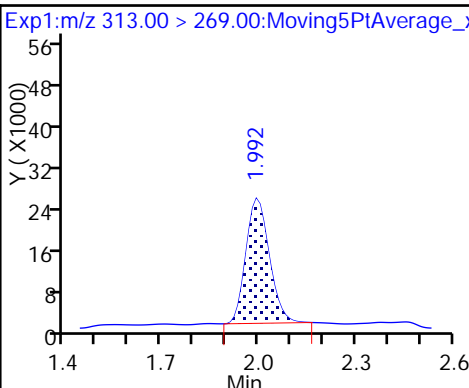
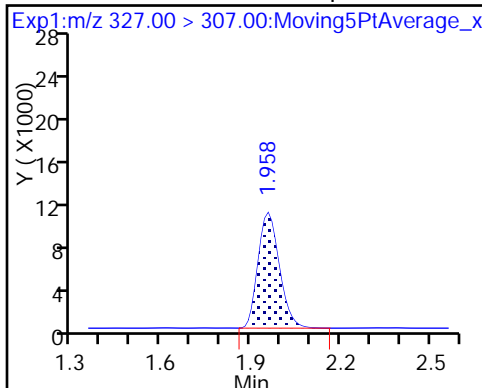
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

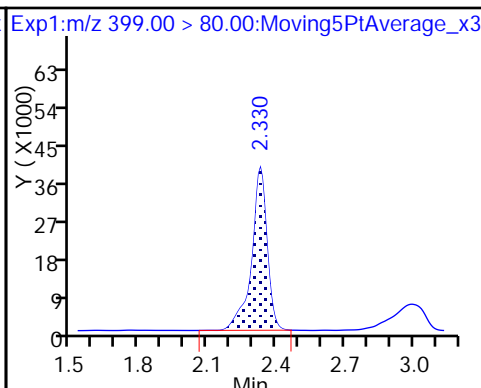
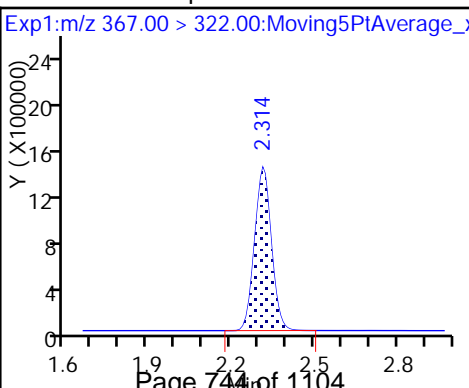
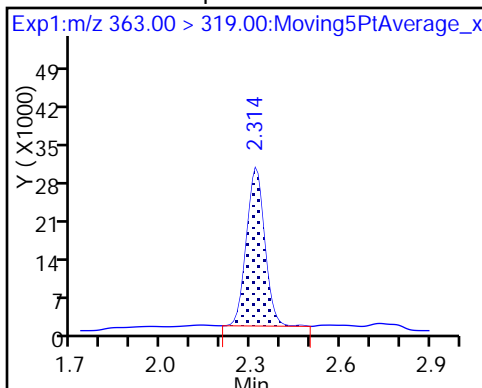
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

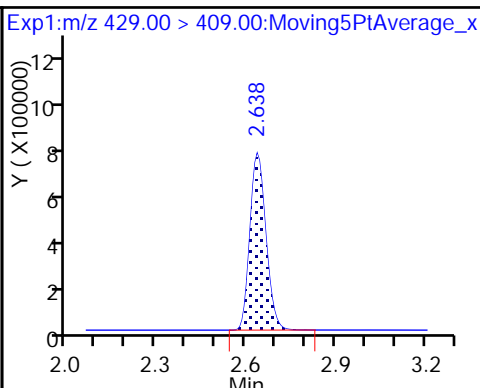
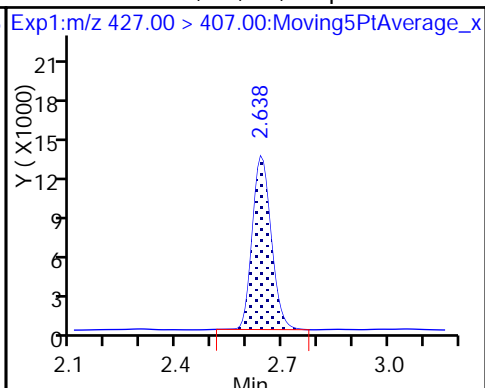
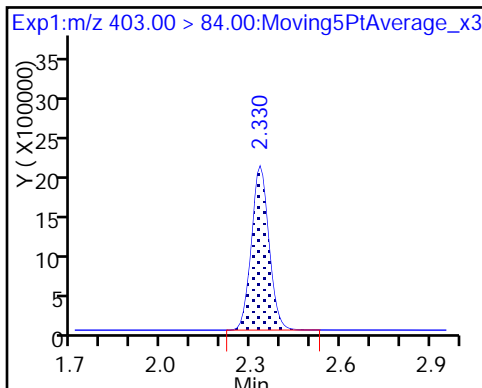
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

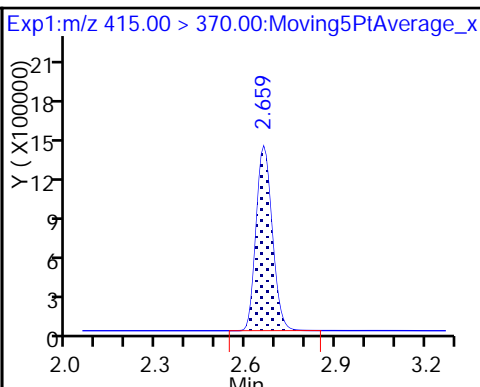
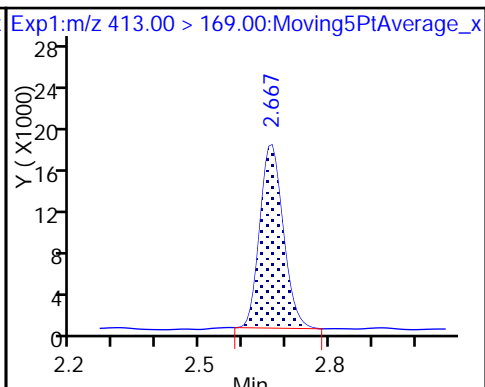
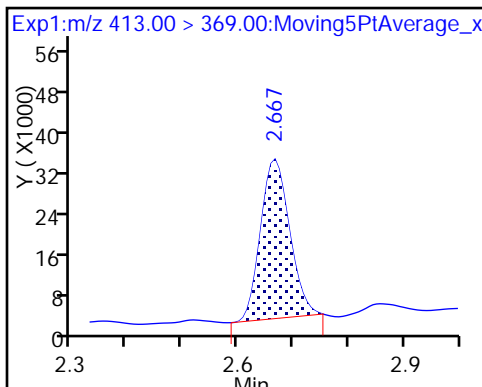
D 12 M2-6:2FTS



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

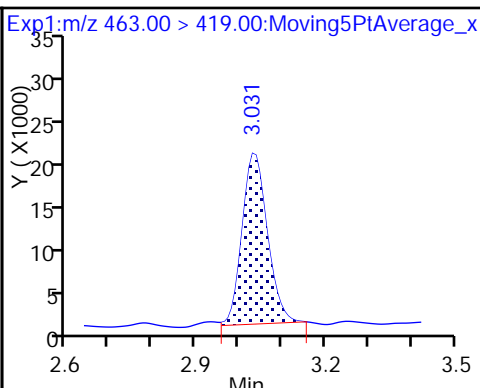
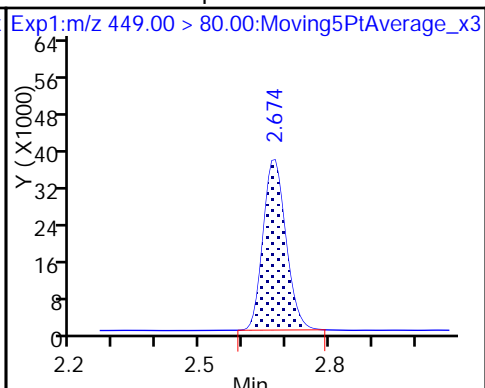
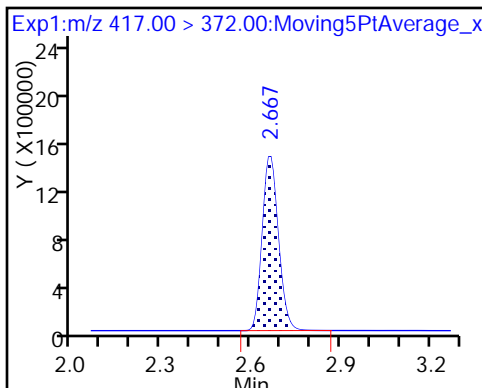
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

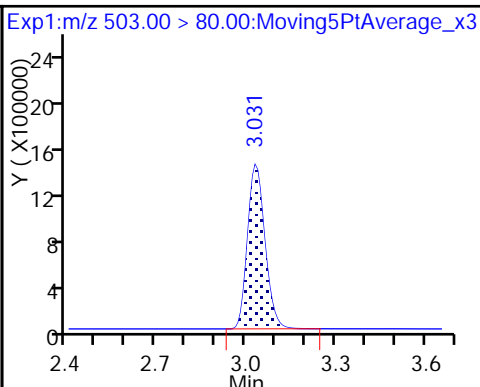
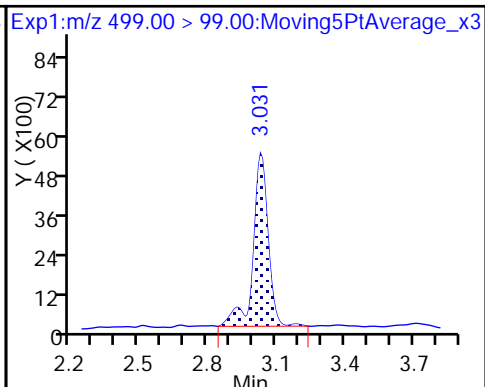
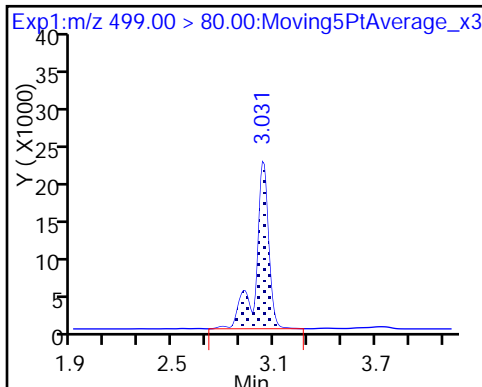
20 Perfluorononanoic acid



17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

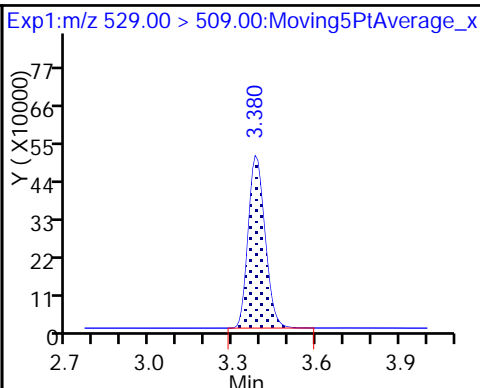
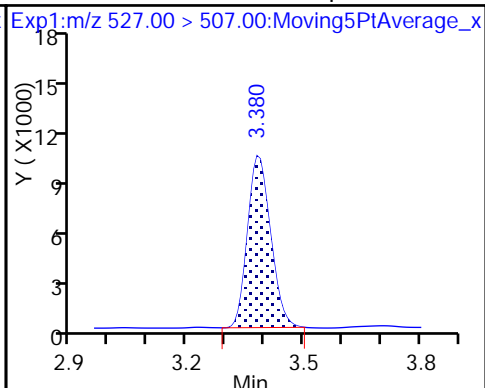
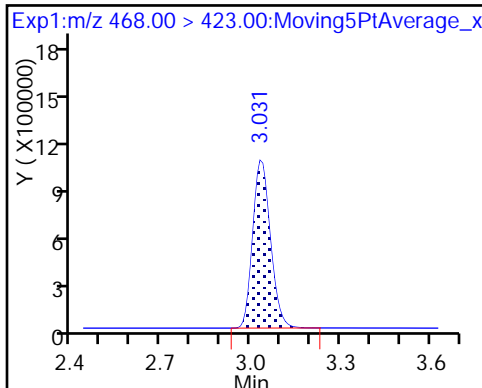
D 18 13C4 PFOS



D 19 13C5 PFNA

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

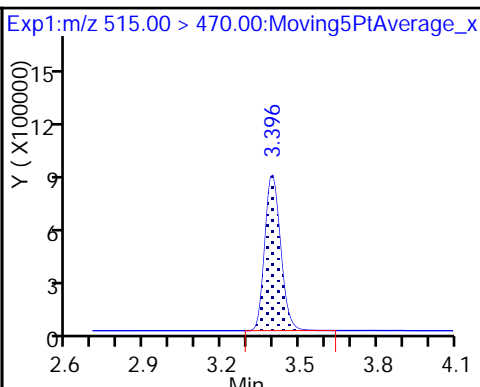
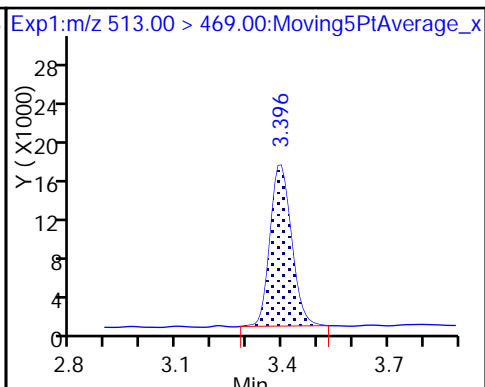
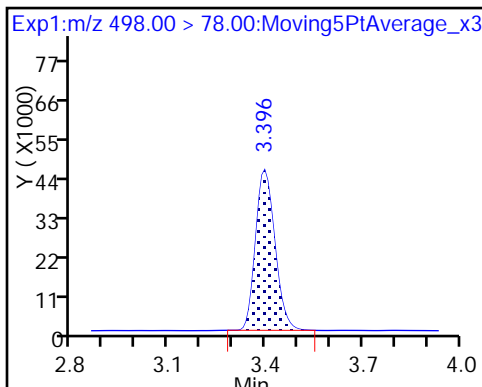
De26 M2-8:2FTS



22 Perfluorooctane Sulfonamide

24 Perfluorodecanoic acid

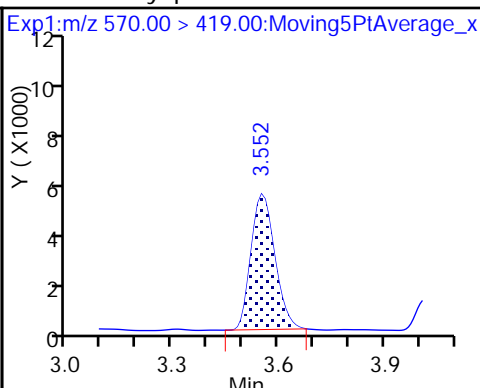
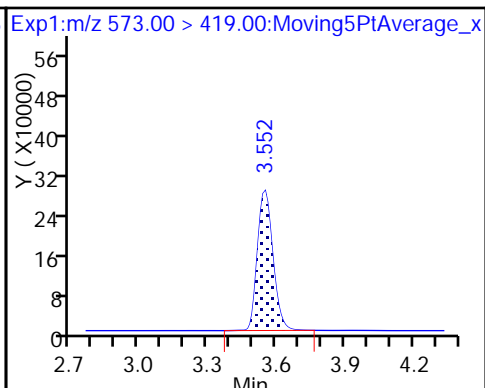
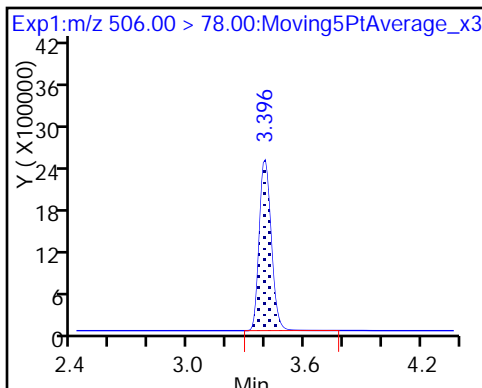
D 23 13C2 PFDA



D 21 13C8 FOSA

D 27 d3-NMeFOSAA

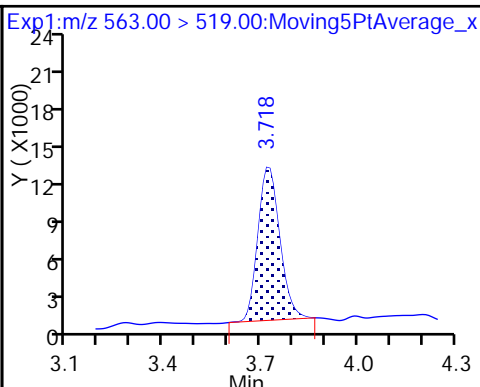
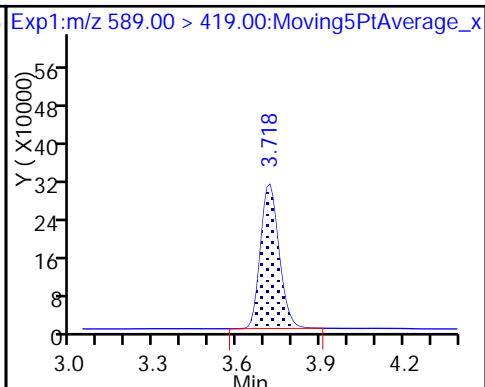
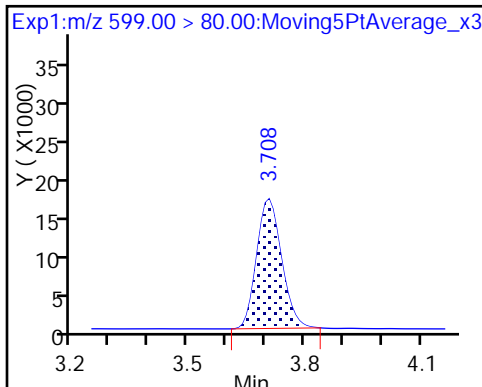
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

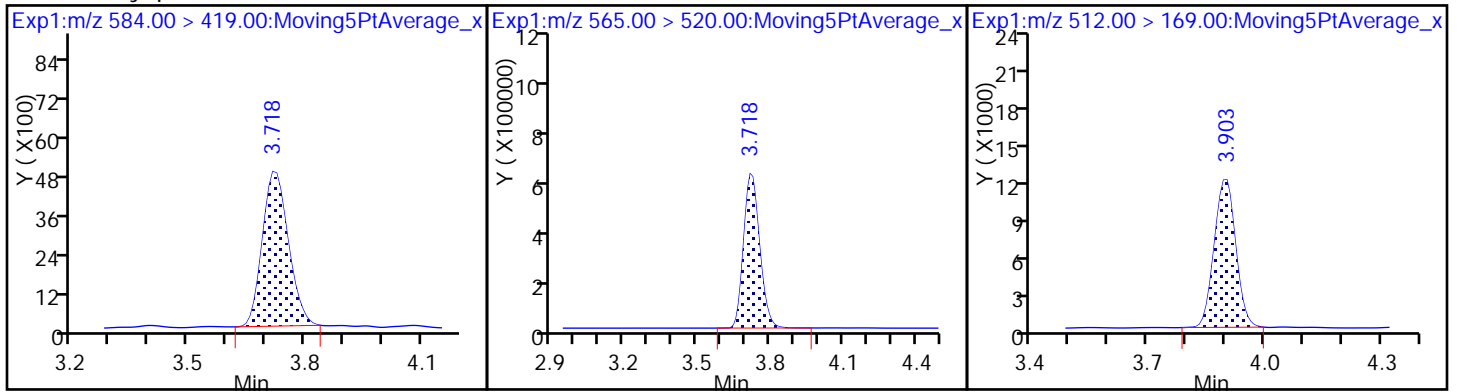
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

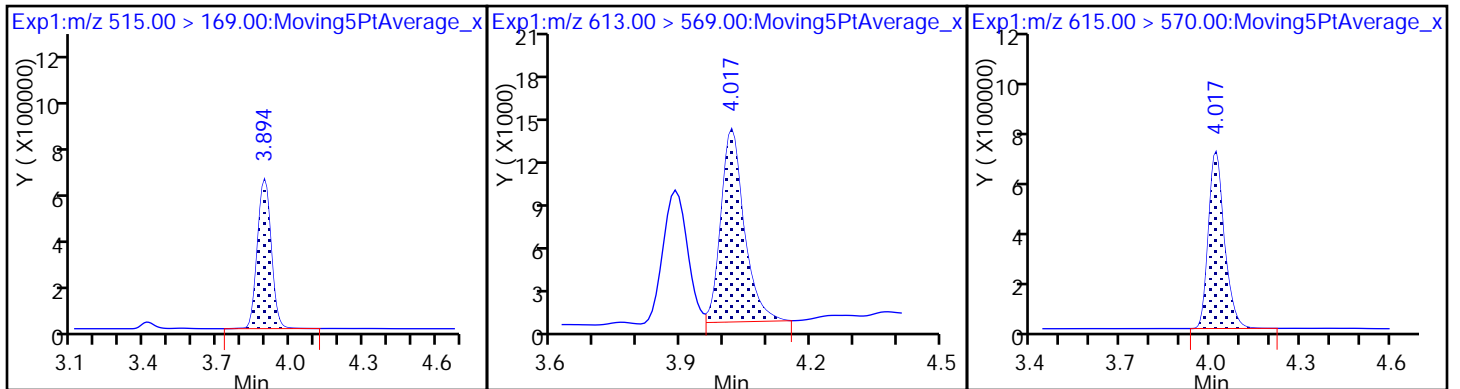
35 MeFOSA



D 34 d-N-MeFOSA-M

37 Perfluorododecanoic acid

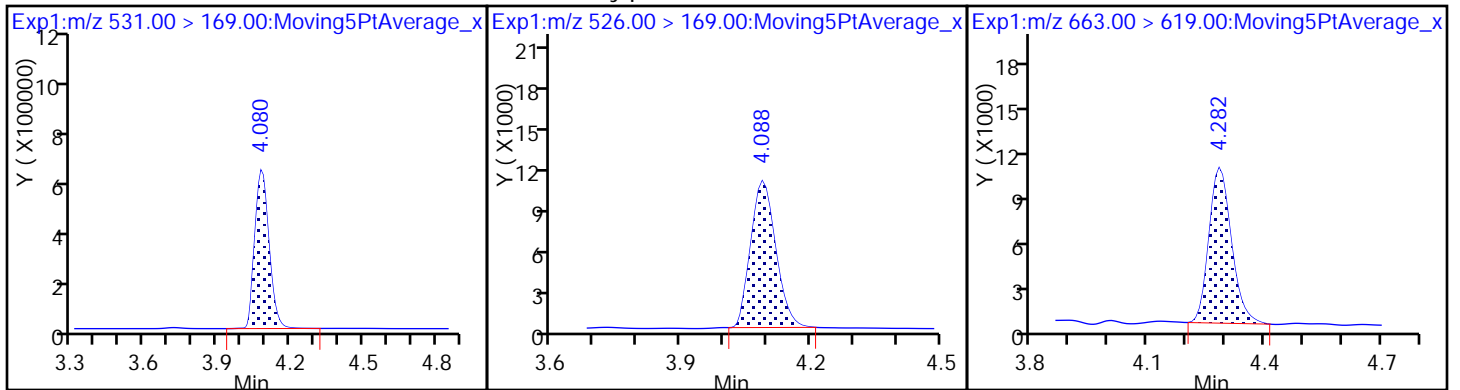
D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

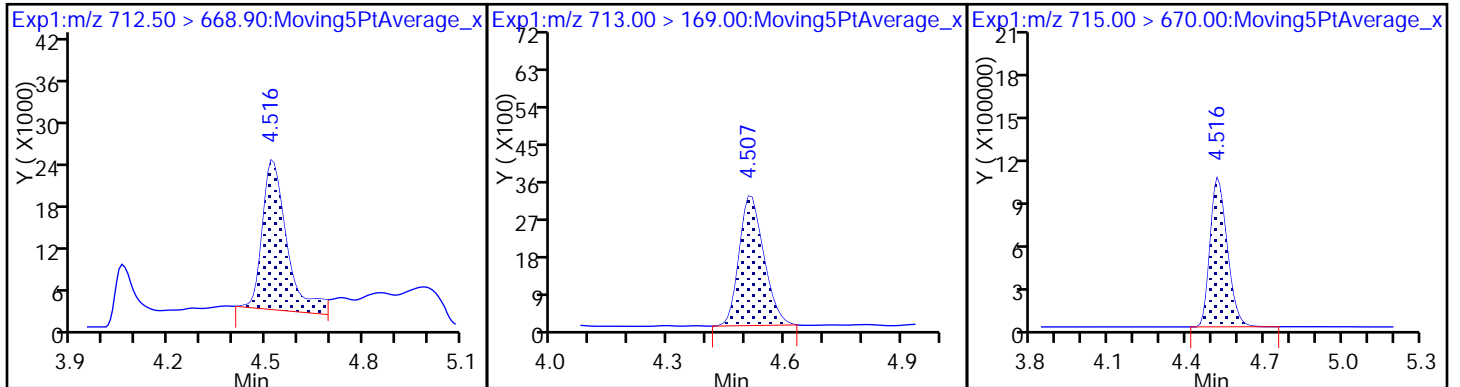
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

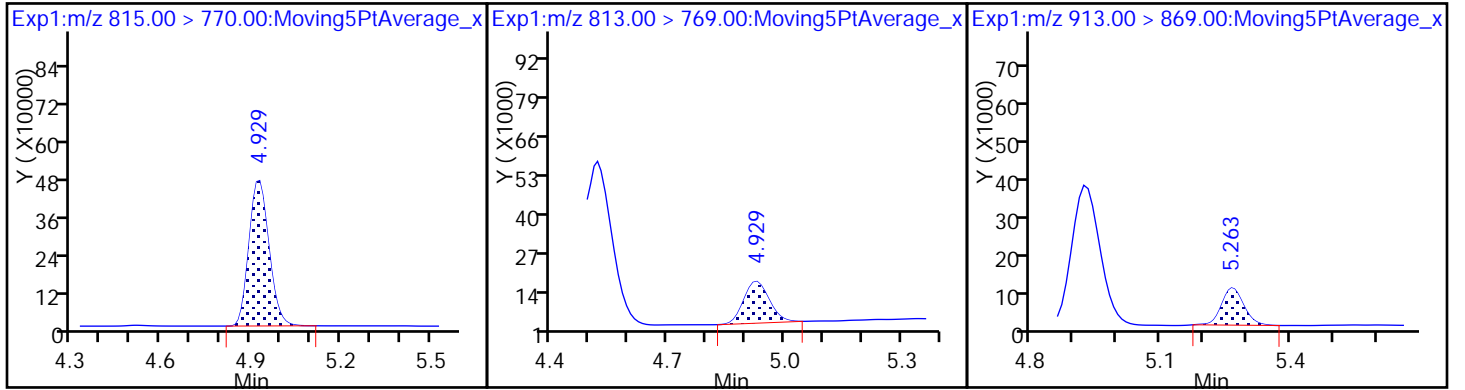
D 43 13C2-PFTeDA



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175462/1 Calibration Date: 07/21/2017 20:38
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21C_015.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.9107 | 0.9526 | | 20.9 | 20.0 | 4.6 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 0.997 | 1.054 | | 21.1 | 20.0 | 5.7 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.422 | 1.300 | | 16.2 | 17.7 | -8.5 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9374 | 0.9252 | | 19.7 | 20.0 | -1.3 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.009 | 1.021 | | 20.2 | 20.0 | 1.1 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.023 | 0.9749 | | 17.3 | 18.2 | -4.7 | 25.0 |
| 6:2FTS | AveID | 0.8582 | 0.9087 | | 20.1 | 19.0 | 5.9 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.046 | 1.091 | | 20.8 | 20.0 | 4.2 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.174 | 1.287 | | 20.9 | 19.0 | 9.7 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.000 | 0.9938 | | 19.9 | 20.0 | -0.6 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.034 | 1.053 | | 18.9 | 18.6 | 1.8 | 25.0 |
| 8:2FTS | AveID | 0.9182 | 0.9223 | | 19.2 | 19.2 | 0.4 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9359 | 1.023 | | 21.9 | 20.0 | 9.3 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9235 | 0.9545 | | 20.7 | 20.0 | 3.4 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9079 | 0.9137 | | 20.1 | 20.0 | 0.6 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6369 | 0.6186 | | 18.7 | 19.3 | -2.9 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8499 | 0.8808 | | 20.7 | 20.0 | 3.6 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.027 | | 20.2 | 20.0 | 1.2 | 25.0 |
| MeFOSA | AveID | 0.8961 | 0.9008 | | 20.1 | 20.0 | 0.5 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9442 | 0.9247 | | 19.6 | 20.0 | -2.1 | 25.0 |
| N-EtFOSA-M | AveID | 0.9273 | 0.9532 | | 20.6 | 20.0 | 2.8 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8512 | 0.8799 | | 20.7 | 20.0 | 3.4 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.947 | 1.852 | | 19.0 | 20.0 | -4.8 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8395 | | 19.0 | 20.0 | -5.0 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.8788 | 0.8346 | | 19.0 | 20.0 | -5.0 | 25.0 |
| 13C4 PFBA | Ave | 179976 | 185474 | | 51.5 | 50.0 | 3.1 | 50.0 |
| 13C5 PFPeA | Ave | 119573 | 129031 | | 54.0 | 50.0 | 7.9 | 50.0 |
| 13C2 PFHxA | Ave | 110403 | 121342 | | 55.0 | 50.0 | 9.9 | 50.0 |
| 13C4-PFHpA | Ave | 97315 | 114235 | | 58.7 | 50.0 | 17.4 | 50.0 |
| 18O2 PFHxS | Ave | 160345 | 172889 | | 51.0 | 47.3 | 7.8 | 50.0 |
| M2-6:2FTS | Ave | 52582 | 55336 | | 50.0 | 47.5 | 5.2 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175462/1 Calibration Date: 07/21/2017 20:38
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21C_015.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 87797 | 96890 | | 55.2 | 50.0 | 10.4 | 50.0 |
| 13C4 PFOS | Ave | 118039 | 117088 | | 47.4 | 47.8 | -0.8 | 50.0 |
| 13C5 PFNA | Ave | 69282 | 77579 | | 56.0 | 50.0 | 12.0 | 50.0 |
| M2-8:2FTS | Ave | 39250 | 39760 | | 48.5 | 47.9 | 1.3 | 50.0 |
| 13C2 PFDA | Ave | 60512 | 59881 | | 49.5 | 50.0 | -1.0 | 50.0 |
| 13C8 FOSA | Ave | 196294 | 197802 | | 50.4 | 50.0 | 0.8 | 50.0 |
| d3-NMeFOSAA | Ave | 21953 | 22025 | | 50.2 | 50.0 | 0.3 | 50.0 |
| d5-NEtFOSAA | Ave | 22991 | 23045 | | 50.1 | 50.0 | 0.2 | 50.0 |
| 13C2 PFUnA | Ave | 41991 | 46415 | | 55.3 | 50.0 | 10.5 | 50.0 |
| d-N-MeFOSA-M | Ave | 50429 | 50148 | | 49.7 | 50.0 | -0.6 | 50.0 |
| 13C2 PFDoA | Ave | 43561 | 45612 | | 52.4 | 50.0 | 4.7 | 50.0 |
| d-N-EtFOSA-M | Ave | 50912 | 49676 | | 48.8 | 50.0 | -2.4 | 50.0 |
| 13C2-PFTeDA | Ave | 81327 | 85439 | | 52.5 | 50.0 | 5.1 | 50.0 |
| 13C2-PFHxDA | Ave | 42486 | 41938 | | 49.4 | 50.0 | -1.3 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_015.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 21-Jul-2017 20:38:31 ALS Bottle#: 31 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 25-Jul-2017 10:40:51 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:03:39

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.536 | 1.537 | -0.001 | 9273712 | 51.5 | | 103 | 30368 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.536 | 1.537 | -0.001 | 3533510 | 20.9 | | 105 | 2204 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.736 | 1.727 | 0.009 | 6451535 | 54.0 | | 108 | 54389 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.736 | 1.737 | 0.0 | 2720956 | 21.1 | | 106 | 1754 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.754 | 1.755 | -0.001 | 152698 | NC | | | 6155 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.763 | 1.755 | 0.008 | 3974481 | 16.2 | | 91.5 | 2886 | |
| | 298.90 > 99.00 | 1.763 | 1.755 | 0.008 | 1639741 | | 2.42(0.00-0.00) | | 2892 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.960 | 1.960 | 0.0 | 1050923 | 19.6 | | 105 | 30677 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 1.994 | 1.994 | 0.0 | 6067106 | 55.0 | | 110 | 32919 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 1.994 | 1.994 | 0.0 | 2245406 | 19.7 | | 98.7 | 6612 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.321 | 2.316 | 0.005 | 5711767 | 58.7 | | 117 | 26087 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.321 | 2.316 | 0.005 | 2331686 | 20.2 | | 101 | 5677 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.337 | 2.324 | 0.013 | 3067433 | 17.3 | | 95.3 | 2794 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.337 | 2.332 | 0.005 | 8177655 | 51.0 | | 108 | 33100 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|-------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.640 | 2.634 | 0.006 | 1.000 | 953339 | 20.1 | 106 | 17248 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.640 | 2.634 | 0.006 | | 2628473 | 50.0 | 105 | 24644 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.661 | 2.656 | 0.005 | | 4914749 | 50.0 | 100 | 33927 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.669 | 2.656 | 0.013 | | 4844514 | 55.2 | 110 | 30186 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.669 | 2.663 | 0.006 | 1.000 | 2113195 | 20.8 | 104 | 422 |
| | 413.00 | > 169.00 | 2.669 | 2.663 | 0.006 | 1.000 | 1191799 | | 1.77(0.90-1.10) | 6381 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.676 | 2.670 | 0.006 | 1.000 | 2869356 | 20.9 | 110 | 20142 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.034 | 3.029 | 0.005 | 1.000 | 2287567 | 18.9 | 102 | 8885 |
| | 499.00 | > 99.00 | 3.034 | 3.029 | 0.005 | 1.000 | 481865 | | 4.75(0.90-1.10) | 4544 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.034 | 3.029 | 0.005 | 1.000 | 1541940 | 19.9 | 99.4 | 3315 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.034 | 3.029 | 0.005 | | 5596821 | 47.4 | 99.2 | 24944 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.034 | 3.029 | 0.005 | | 3878947 | 56.0 | 112 | 27417 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.377 | 3.372 | 0.005 | 1.000 | 702621 | 19.2 | 100 | 13133 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.377 | 3.372 | 0.005 | | 1904510 | 48.5 | 101 | 19233 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.394 | 3.380 | 0.014 | 1.000 | 1224680 | 21.9 | 109 | 5399 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.385 | 3.380 | 0.005 | | 2994038 | 49.5 | 99.0 | 10686 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.394 | 3.388 | 0.006 | | 9890080 | 50.4 | 101 | 17946 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.394 | 3.388 | 0.006 | 1.000 | 3776202 | 20.7 | 103 | 17223 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.548 | 3.543 | 0.005 | 1.000 | 402503 | 20.1 | 101 | 2498 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.548 | 3.543 | 0.005 | | 1101258 | 50.2 | 100 | 8207 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.704 | 3.690 | 0.014 | 1.000 | 1396402 | 18.7 | 97.1 | 10567 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.704 | 3.699 | 0.005 | | 1152240 | 50.1 | 100 | 3294 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.714 | 3.709 | 0.005 | 1.000 | 953211 | 20.2 | 101 | 1583 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.714 | 3.709 | 0.005 | 1.003 | 405958 | 20.7 | 104 | 4670 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.714 | 3.709 | 0.005 | | 2320756 | 55.3 | 111 | 7923 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.890 | 3.886 | 0.004 | 2507422 | 49.7 | 99.4 | 1713 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.899 | 3.895 | 0.004 | 1.000 | 903477 | 20.1 | 101 | 6849 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.008 | 4.004 | 0.004 | 2280582 | 52.4 | 105 | 5261 | |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.008 | 4.004 | 0.004 | 1.000 | 843580 | 19.6 | 97.9 | 1094 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.078 | 4.072 | 0.006 | 2483824 | 48.8 | 97.6 | 5604 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.087 | 4.080 | 0.007 | 1.000 | 947005 | 20.6 | 103 | 5929 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.273 | 4.266 | 0.007 | 1.000 | 802665 | 20.7 | 103 | 300 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.506 | 4.498 | 0.008 | 4271962 | 52.5 | 105 | 14093 | |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.506 | 4.498 | 0.008 | 1.000 | 1689904 | 19.0 | 95.2 | 603 |
| | 713.00 | > 169.00 | 4.497 | 4.498 | -0.001 | 0.998 | 214478 | 7.88(0.00-0.00) | | 4402 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 4.907 | 4.900 | 0.007 | 2096891 | 49.4 | 98.7 | 3149 | |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 4.907 | 4.910 | -0.003 | 1.000 | 765811 | 19.0 | 95.0 | 103 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.248 | 5.243 | 0.005 | 1.000 | 761372 | 19.0 | 95.0 | 346 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULLL-L4_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_015.d

Injection Date: 21-Jul-2017 20:38:31

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

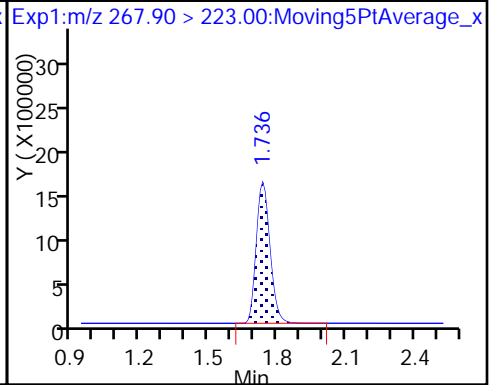
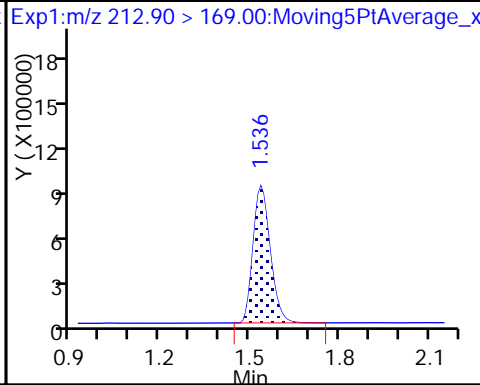
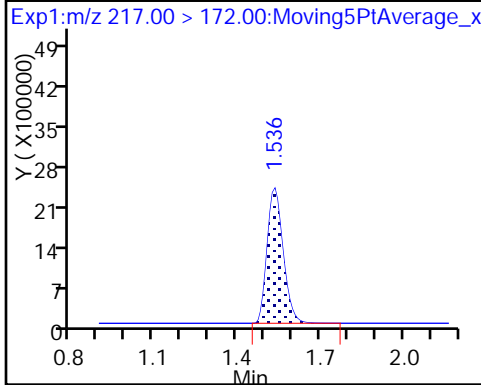
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

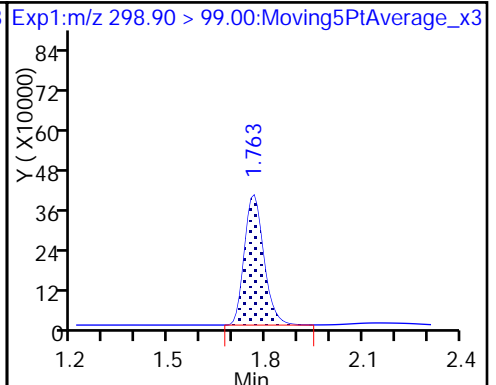
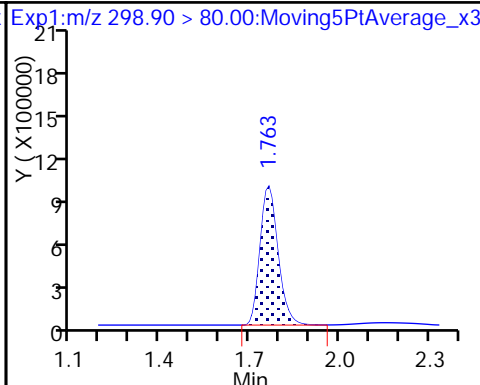
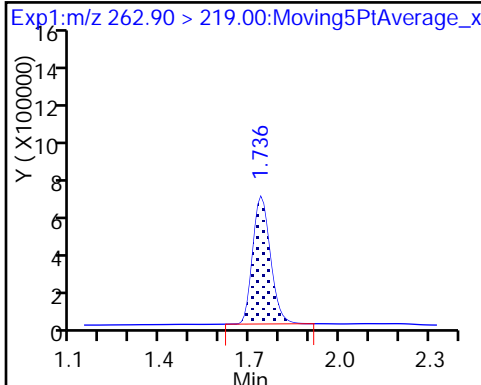
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

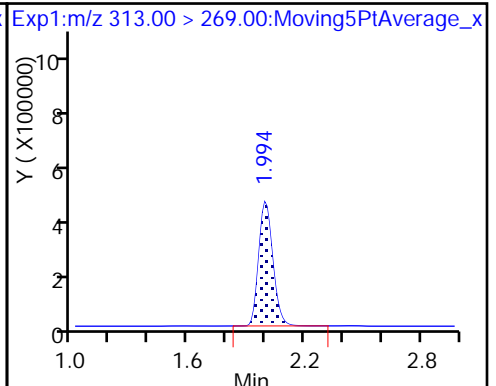
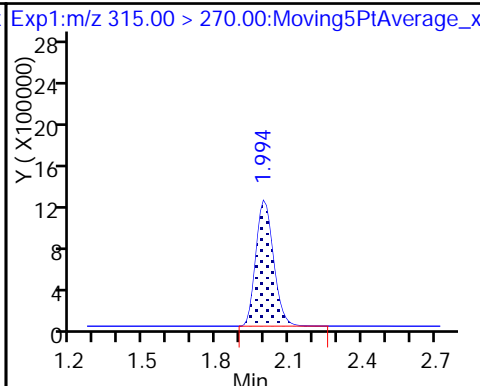
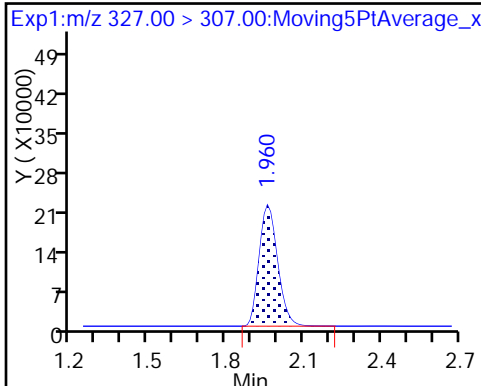
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

De 7 13C2 PFHxA

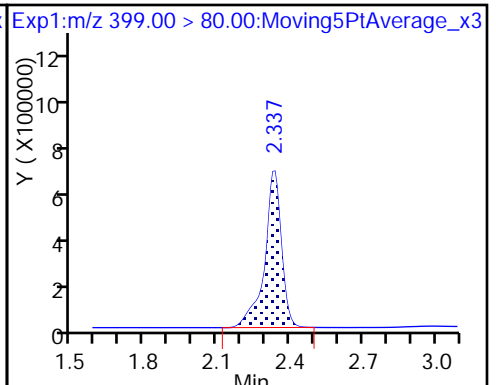
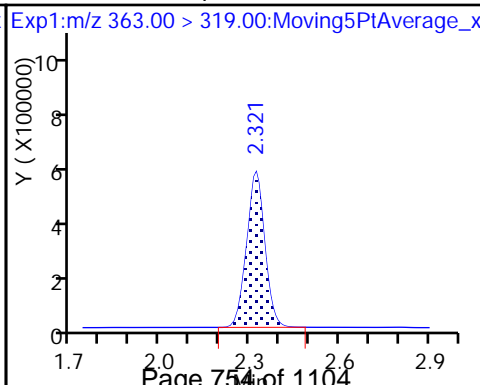
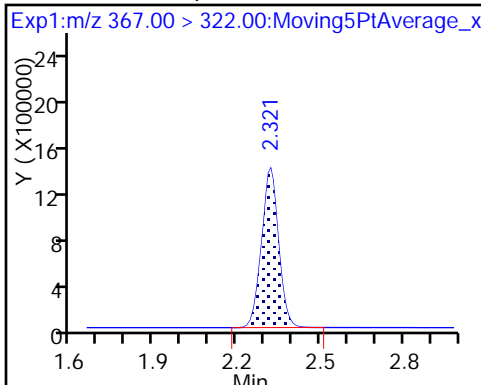
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

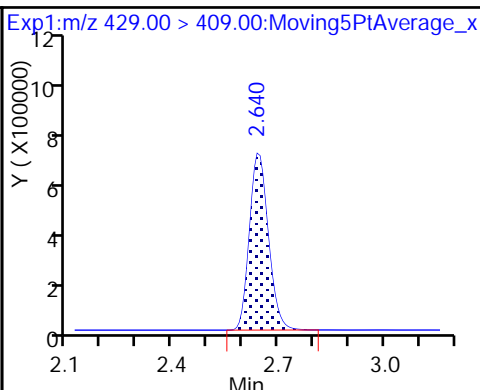
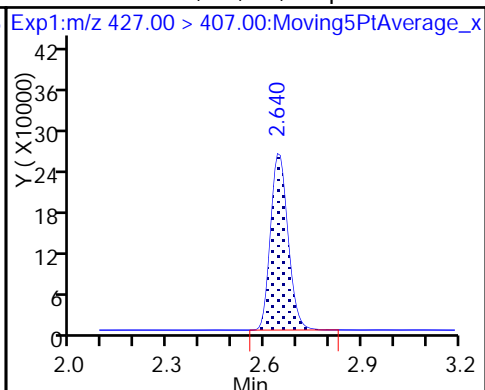
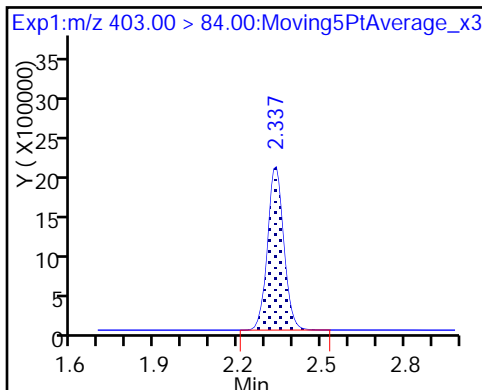
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

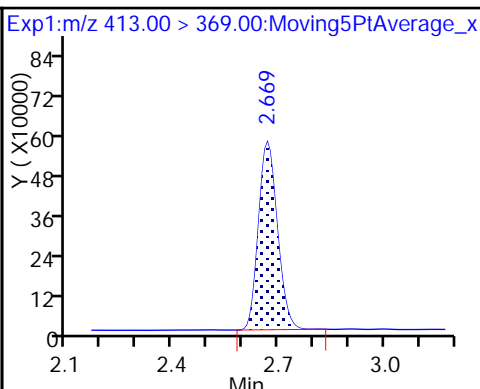
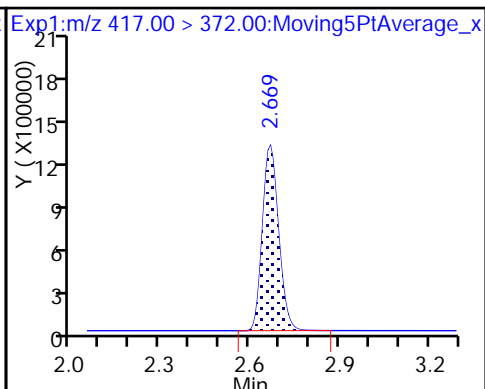
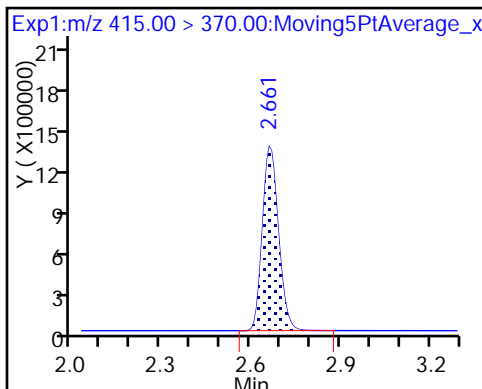
D 12 M2-6:2FTS



* 62 13C2-PFOA

D 14 13C4 PFOA

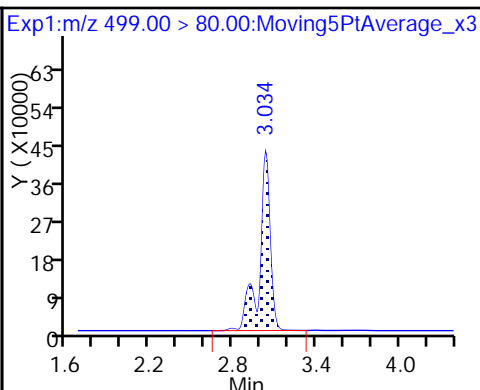
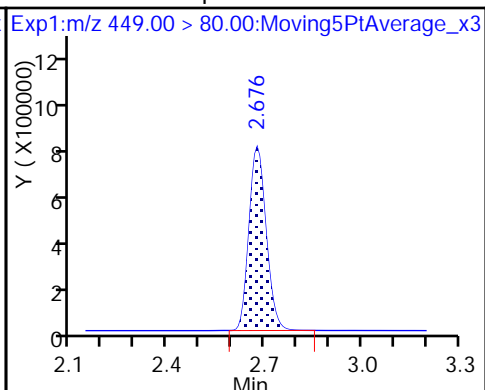
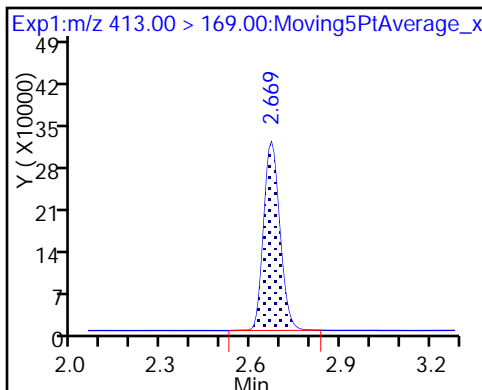
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

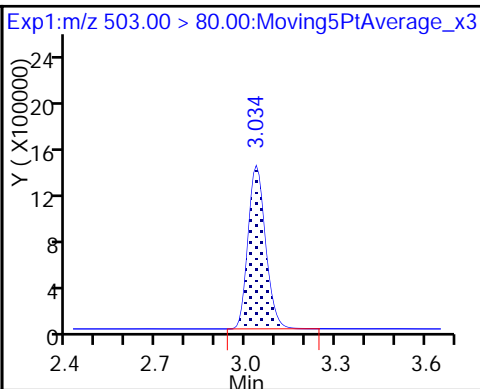
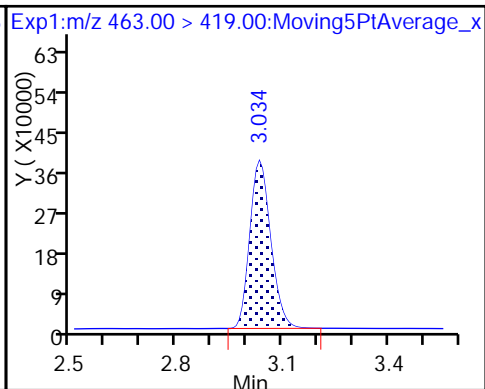
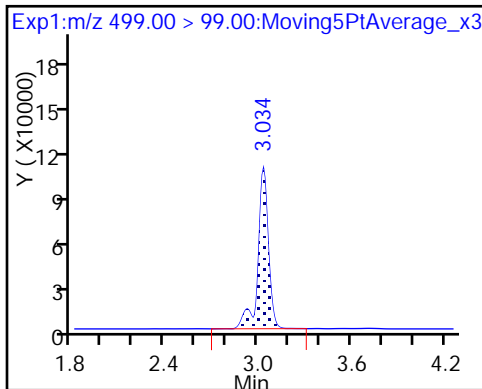
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

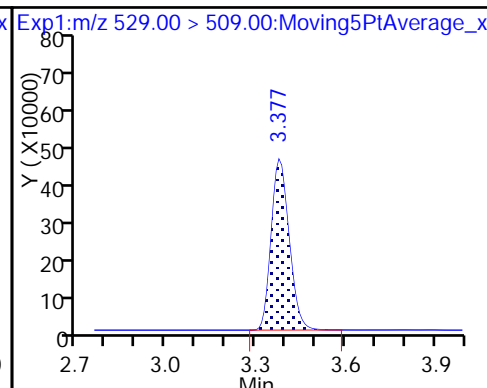
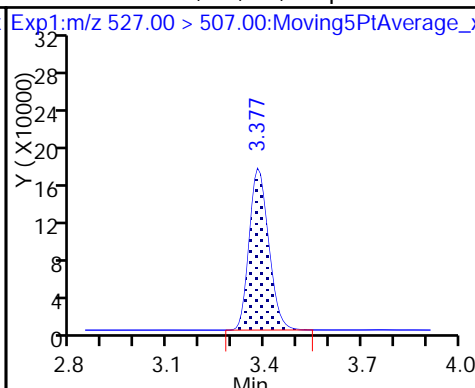
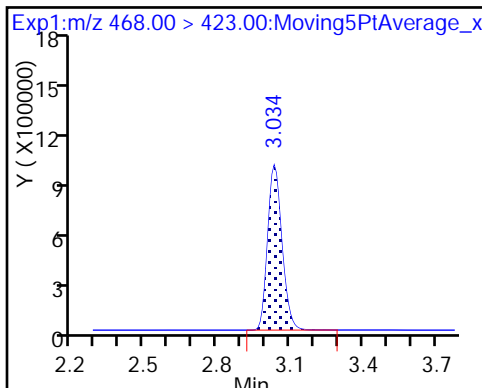
D 18 13C4 PFOS



D 19 13C5 PFNA

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

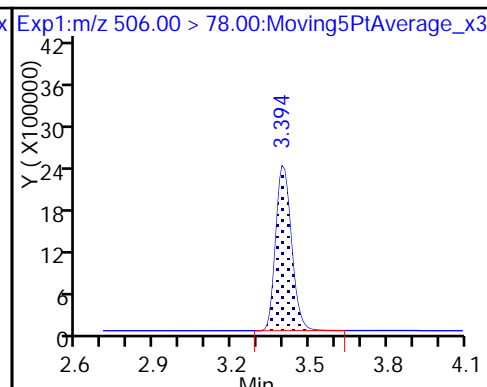
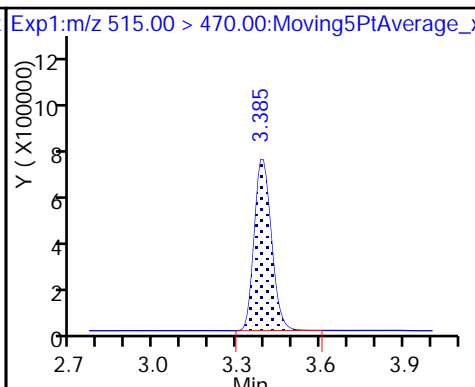
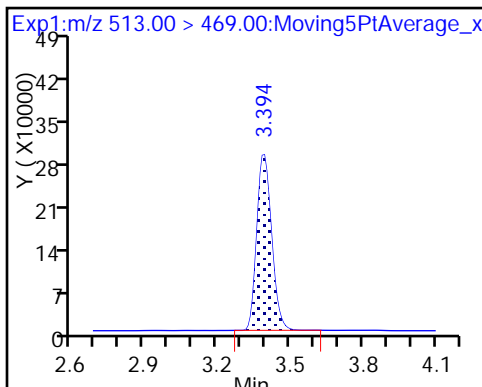
D26 M2-8:2FTS



24 Perfluorodecanoic acid

D 23 13C2 PFDA

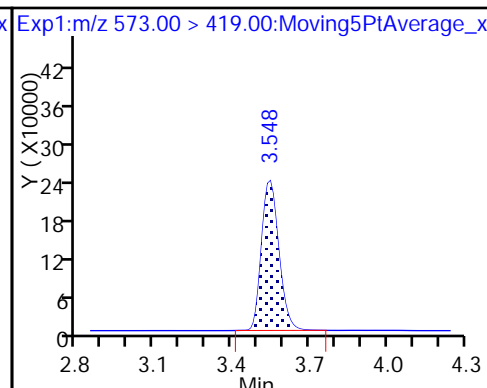
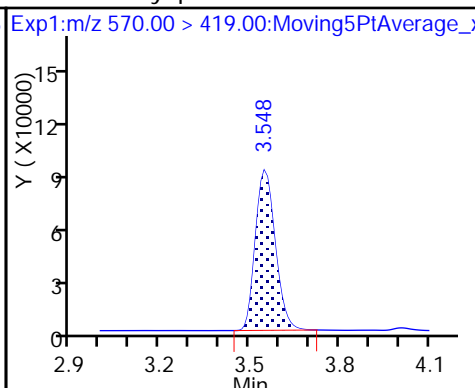
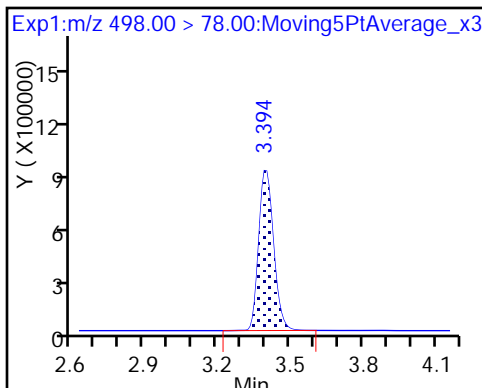
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

28 N-methyl perfluorooctane sulfonamide

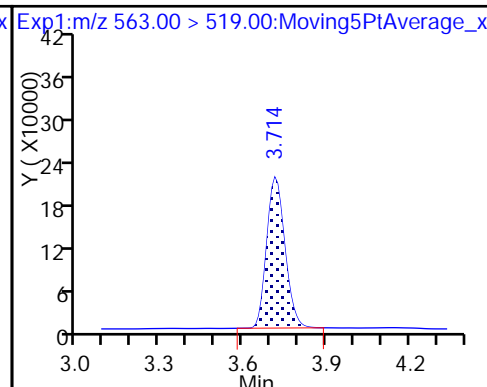
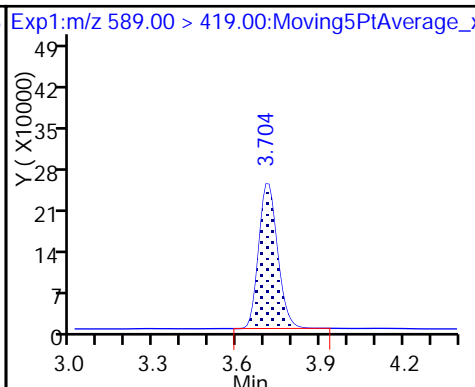
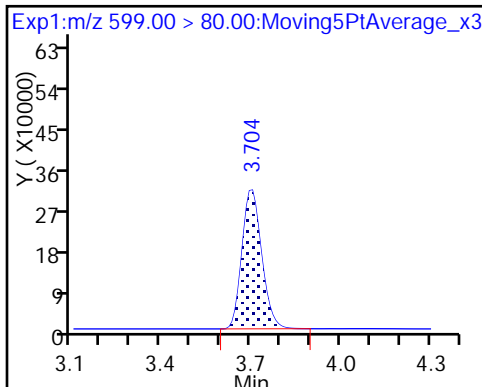
D 27 d3-NMeFOSAA



29 Perfluorodecane Sulfonic acid

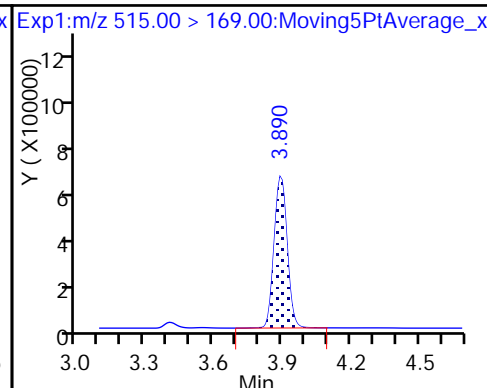
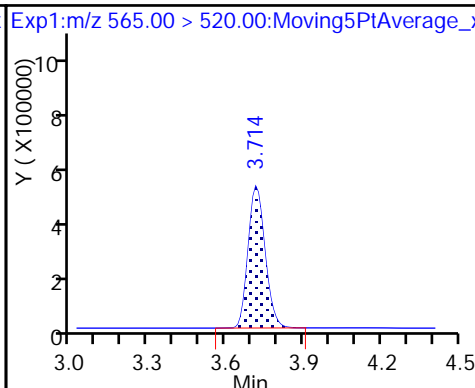
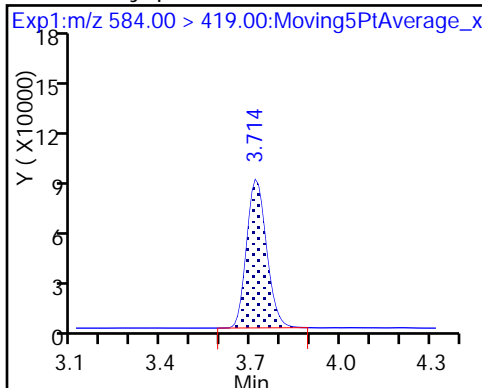
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

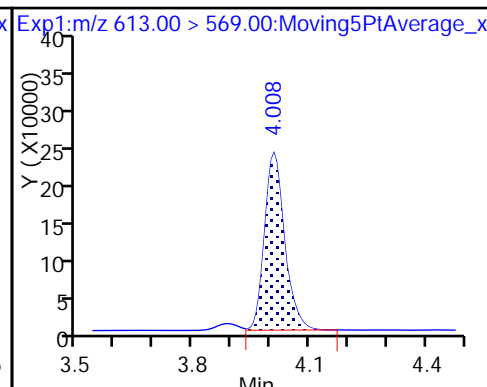
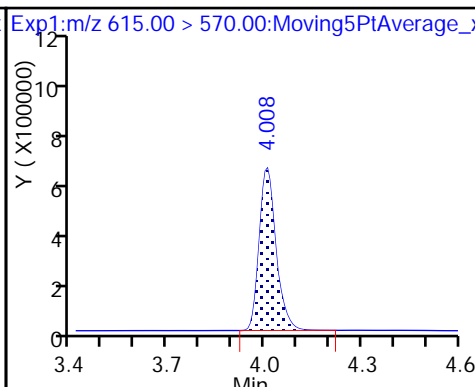
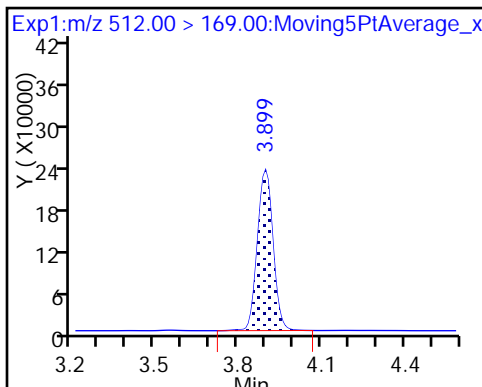
D 34 d-N-MeFOSA-M



35 MeFOSA

D 36 13C2 PFDaA

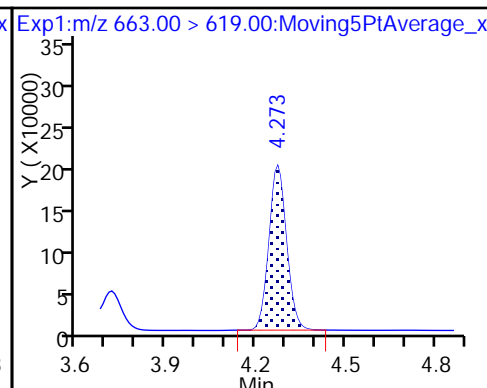
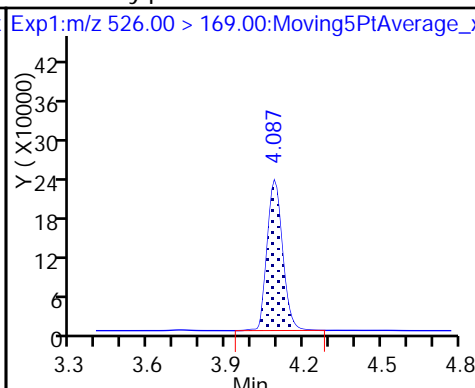
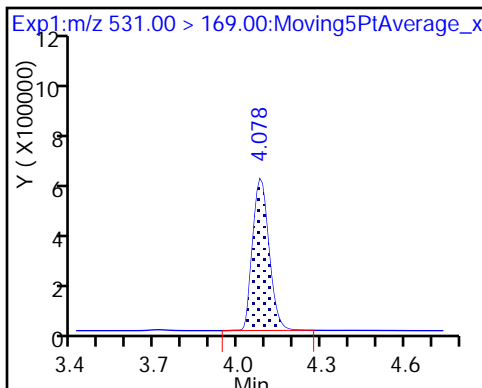
37 Perfluorododecanoic acid



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

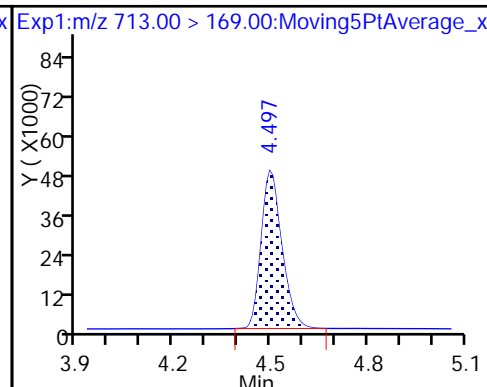
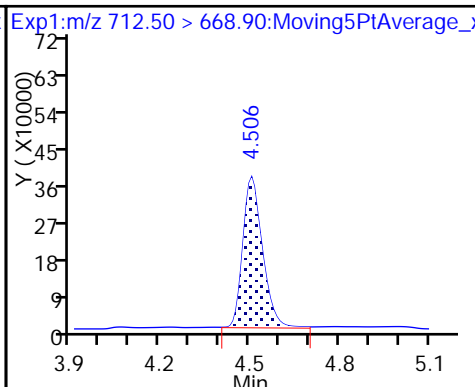
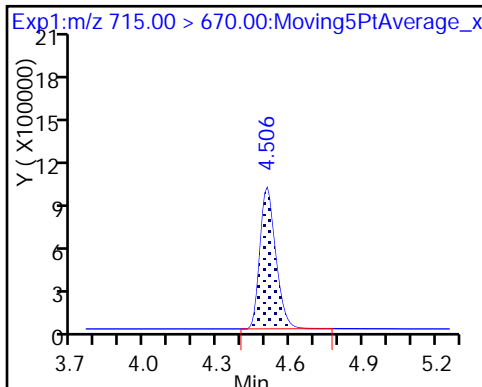
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

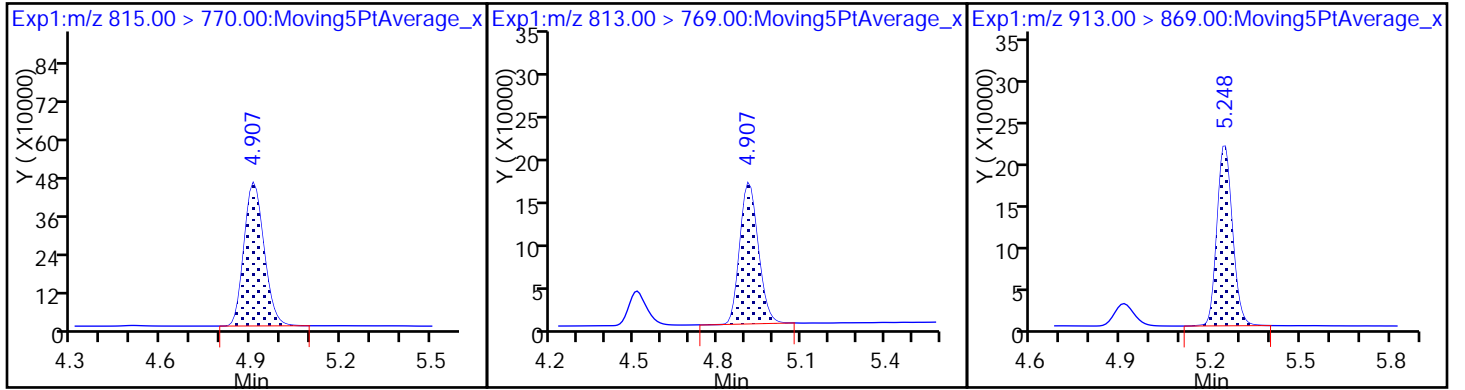
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175462/9 Calibration Date: 07/21/2017 21:33
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21C_023.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.9107 | 0.9237 | | 50.7 | 50.0 | 1.4 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 0.997 | 0.9816 | | 49.2 | 50.0 | -1.6 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.422 | 1.255 | | 39.0 | 44.2 | -11.7 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9374 | 0.9560 | | 51.0 | 50.0 | 2.0 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.009 | 0.9936 | | 49.2 | 50.0 | -1.5 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.023 | 0.9776 | | 43.5 | 45.5 | -4.5 | 25.0 |
| 6:2FTS | AveID | 0.8582 | 0.8350 | | 46.1 | 47.4 | -2.7 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.046 | 1.028 | | 49.1 | 50.0 | -1.8 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.174 | 1.158 | | 47.0 | 47.6 | -1.3 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.000 | 0.996 | | 49.8 | 50.0 | -0.4 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.034 | 1.013 | | 45.5 | 46.4 | -2.0 | 25.0 |
| 8:2FTS | AveID | 0.9182 | 0.8612 | | 44.9 | 47.9 | -6.2 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9359 | 0.9261 | | 49.5 | 50.0 | -1.0 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9235 | 0.9079 | | 49.2 | 50.0 | -1.7 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9079 | 0.9213 | | 50.7 | 50.0 | 1.5 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6369 | 0.6071 | | 46.0 | 48.2 | -4.7 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8499 | 0.8386 | | 49.3 | 50.0 | -1.3 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 0.998 | | 49.4 | 50.0 | -1.1 | 25.0 |
| MeFOSA | AveID | 0.8961 | 0.8790 | | 49.0 | 50.0 | -1.9 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9442 | 0.9609 | | 50.9 | 50.0 | 1.8 | 25.0 |
| N-EtFOSA-M | AveID | 0.9273 | 0.9414 | | 50.8 | 50.0 | 1.5 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8512 | 0.9210 | | 54.1 | 50.0 | 8.2 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.947 | 1.833 | | 47.1 | 50.0 | -5.9 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8151 | | 47.2 | 50.0 | -5.7 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.8788 | 0.8071 | | 45.9 | 50.0 | -8.2 | 25.0 |
| 13C4 PFBA | Ave | 179976 | 179034 | | 49.7 | 50.0 | -0.5 | 50.0 |
| 13C5 PFPeA | Ave | 119573 | 122233 | | 51.1 | 50.0 | 2.2 | 50.0 |
| 13C2 PFHxA | Ave | 110403 | 118354 | | 53.6 | 50.0 | 7.2 | 50.0 |
| 13C4-PFHpA | Ave | 97315 | 108911 | | 56.0 | 50.0 | 11.9 | 50.0 |
| 18O2 PFHxS | Ave | 160345 | 174480 | | 51.5 | 47.3 | 8.8 | 50.0 |
| M2-6:2FTS | Ave | 52582 | 53483 | | 48.3 | 47.5 | 1.7 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175462/9 Calibration Date: 07/21/2017 21:33
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21C_023.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 87797 | 93139 | | 53.0 | 50.0 | 6.1 | 50.0 |
| 13C4 PFOS | Ave | 118039 | 114874 | | 46.5 | 47.8 | -2.7 | 50.0 |
| 13C5 PFNA | Ave | 69282 | 72949 | | 52.6 | 50.0 | 5.3 | 50.0 |
| M2-8:2FTS | Ave | 39250 | 39415 | | 48.1 | 47.9 | 0.4 | 50.0 |
| 13C2 PFDA | Ave | 60512 | 64619 | | 53.4 | 50.0 | 6.8 | 50.0 |
| 13C8 FOSA | Ave | 196294 | 196685 | | 50.1 | 50.0 | 0.2 | 50.0 |
| d3-NMeFOSAA | Ave | 21953 | 21431 | | 48.8 | 50.0 | -2.4 | 50.0 |
| d5-NEtFOSAA | Ave | 22991 | 22867 | | 49.7 | 50.0 | -0.5 | 50.0 |
| 13C2 PFUnA | Ave | 41991 | 45484 | | 54.2 | 50.0 | 8.3 | 50.0 |
| d-N-MeFOSA-M | Ave | 50429 | 51438 | | 51.0 | 50.0 | 2.0 | 50.0 |
| 13C2 PFDoA | Ave | 43561 | 42322 | | 48.6 | 50.0 | -2.8 | 50.0 |
| d-N-EtFOSA-M | Ave | 50912 | 48963 | | 48.1 | 50.0 | -3.8 | 50.0 |
| 13C2-PFTEtDA | Ave | 81327 | 81132 | | 49.9 | 50.0 | -0.2 | 50.0 |
| 13C2-PFHxDA | Ave | 42486 | 40673 | | 47.9 | 50.0 | -4.3 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_023.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 21-Jul-2017 21:33:44 ALS Bottle#: 32 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 16:31:50 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:10:06

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.537 | 1.537 | 0.0 | 8951695 | 49.7 | | 99.5 | 25076 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.537 | 1.537 | 0.0 | 1.000 | 8268235 | 50.7 | 101 | 4767 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.727 | 1.727 | 0.0 | 6111670 | 51.1 | | 102 | 39836 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.737 | 1.737 | 0.0 | 1.000 | 5999311 | 49.2 | 98.4 | 3697 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.755 | 1.755 | 0.0 | 147995 | NC | | | 6008 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.755 | 1.755 | 0.0 | 1.000 | 9679724 | 39.0 | 88.3 | 6470 | |
| | 298.90 > 99.00 | 1.755 | 1.755 | 0.0 | 1.000 | 3974722 | 2.44(0.00-0.00) | | 6694 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.960 | 1.960 | 0.0 | 1.000 | 2637413 | 50.8 | 109 | 66738 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 1.994 | 1.994 | 0.0 | 5917707 | 53.6 | | 107 | 33801 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 1.994 | 1.994 | 0.0 | 1.000 | 5657594 | 51.0 | 102 | 12686 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.316 | 2.316 | 0.0 | 5445527 | 56.0 | | 112 | 24021 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.316 | 2.316 | 0.0 | 1.000 | 5410839 | 49.2 | 98.5 | 9845 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.324 | 2.324 | 0.0 | 1.000 | 7760763 | 43.5 | 95.5 | 5661 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.332 | 2.332 | 0.0 | 8252910 | 51.5 | | 109 | 33734 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|-------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.634 | 2.634 | 0.0 | 1.000 | 2116755 | 46.1 | 97.3 | 28878 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.634 | 2.634 | 0.0 | | 2540444 | 48.3 | 102 | 29032 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.656 | 2.656 | 0.0 | | 4460103 | 50.0 | 100 | 25141 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.656 | 2.656 | 0.0 | | 4656963 | 53.0 | 106 | 24398 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.663 | 2.663 | 0.0 | 1.000 | 4785231 | 49.1 | 98.2 | 907 |
| | 413.00 | > 169.00 | 2.663 | 2.663 | 0.0 | 1.000 | 2813219 | | 1.70(0.90-1.10) | 8747 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.670 | 2.670 | 0.0 | 1.000 | 6333497 | 47.0 | 98.7 | 31287 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.029 | 3.029 | 0.0 | 1.000 | 5400907 | 45.5 | 98.0 | 11534 |
| | 499.00 | > 99.00 | 3.029 | 3.029 | 0.0 | 1.000 | 1145378 | | 4.72(0.90-1.10) | 7502 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.029 | 3.029 | 0.0 | 1.000 | 3632526 | 49.8 | 99.6 | 7537 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.029 | 3.029 | 0.0 | | 5490956 | 46.5 | 97.3 | 30201 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.029 | 3.029 | 0.0 | | 3647427 | 52.6 | 105 | 17693 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.372 | 3.372 | 0.0 | 1.000 | 1625841 | 44.9 | 93.8 | 17815 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.372 | 3.372 | 0.0 | | 1887970 | 48.1 | 100 | 24057 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.380 | 3.380 | 0.0 | 1.000 | 2992188 | 49.5 | 99.0 | 9014 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.380 | 3.380 | 0.0 | | 3230951 | 53.4 | 107 | 13012 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.388 | 3.388 | 0.0 | | 9834227 | 50.1 | 100 | 26505 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.388 | 3.388 | 0.0 | 1.000 | 8928867 | 49.2 | 98.3 | 21397 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.543 | 3.543 | 0.0 | 1.000 | 987152 | 50.7 | 101 | 5477 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.543 | 3.543 | 0.0 | | 1071532 | 48.8 | 97.6 | 7637 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.690 | 3.690 | 0.0 | 1.000 | 3361649 | 46.0 | 95.3 | 11195 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.699 | 3.699 | 0.0 | | 1143360 | 49.7 | 99.5 | 3045 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.709 | 3.709 | 0.0 | 1.000 | 2269611 | 49.4 | 98.9 | 3410 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.709 | 3.709 | 0.0 | 1.003 | 958794 | 49.3 | 98.7 | 7192 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.709 | 3.709 | 0.0 | | 2274213 | 54.2 | 108 | 8515 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.886 | 3.886 | 0.0 | 2571891 | 51.0 | 102 | 3153 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.895 | 3.895 | 0.0 | 1.000 | 2260616 | 49.0 | 98.1 | 7231 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.004 | 4.004 | 0.0 | 2116116 | 48.6 | 97.2 | 4335 | |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.004 | 4.004 | 0.0 | 1.000 | 2033469 | 50.9 | 102 | 2342 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.072 | 4.072 | 0.0 | 2448136 | 48.1 | 96.2 | 6184 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.080 | 4.080 | 0.0 | 1.000 | 2304776 | 50.8 | 102 | 4330 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.266 | 4.266 | 0.0 | 1.000 | 1948832 | 54.1 | 108 | 816 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.498 | 4.498 | 0.0 | 4056579 | 49.9 | 99.8 | 12147 | |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.498 | 4.498 | 0.0 | 1.000 | 3878403 | 47.1 | 94.1 | 1488 |
| | 713.00 | > 169.00 | 4.498 | 4.498 | 0.0 | 1.000 | 533561 | 7.27(0.00-0.00) | | 8111 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 4.900 | 4.900 | 0.0 | 2033638 | 47.9 | 95.7 | 3231 | |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 4.910 | 4.910 | 0.0 | 1.000 | 1724822 | 47.2 | 94.3 | 227 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.243 | 5.243 | 0.0 | 1.000 | 1707802 | 45.9 | 91.8 | 665 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_023.d

Injection Date: 21-Jul-2017 21:33:44

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

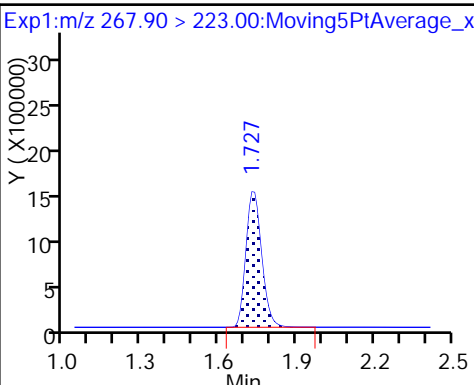
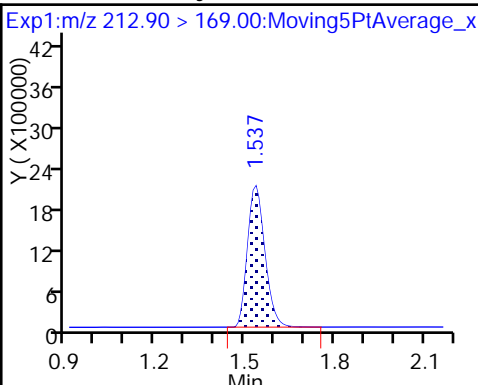
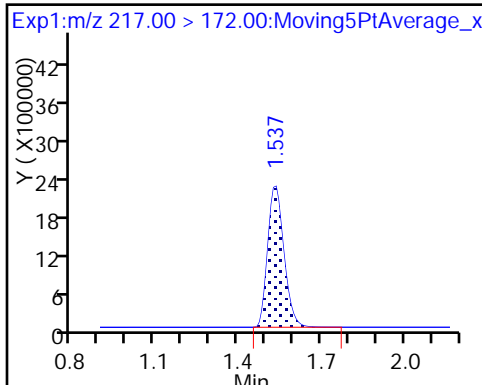
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

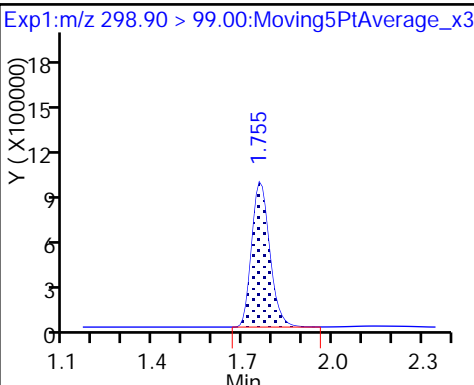
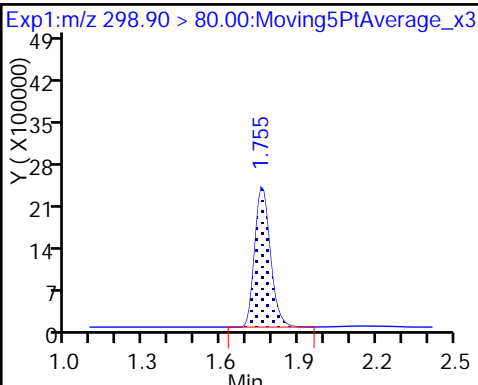
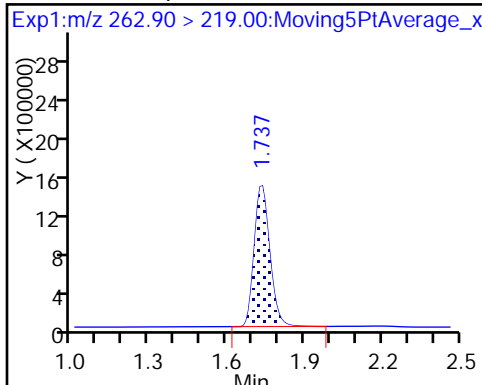
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

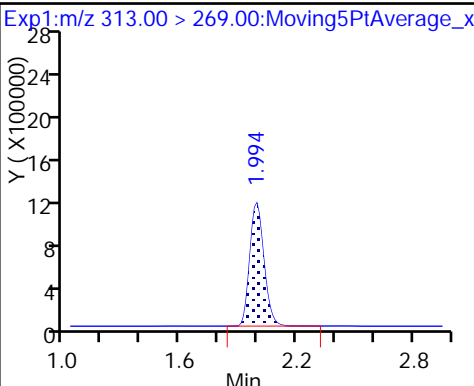
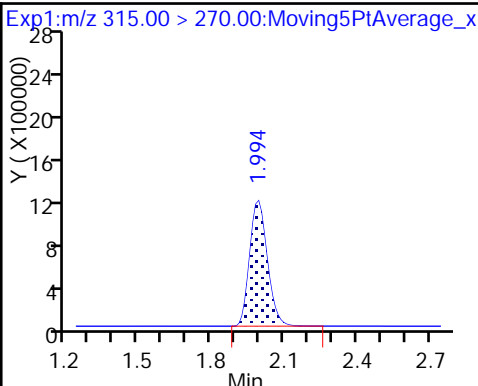
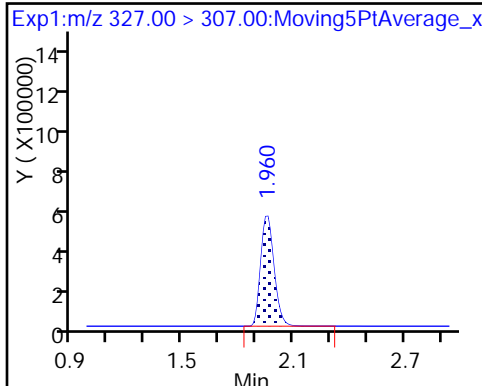
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

De 7 13C2 PFHxA

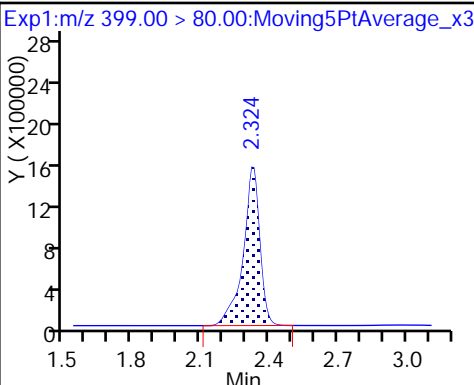
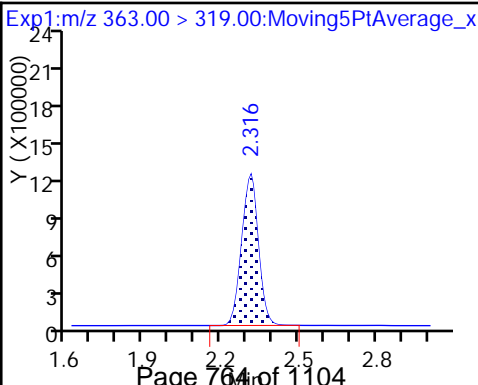
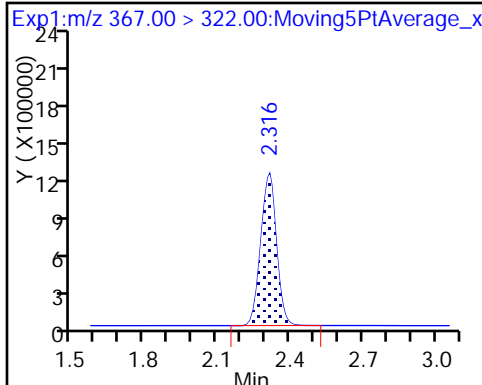
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

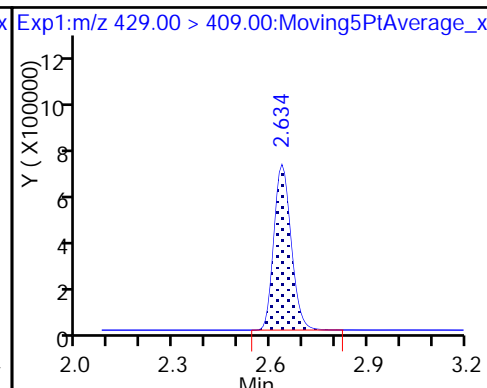
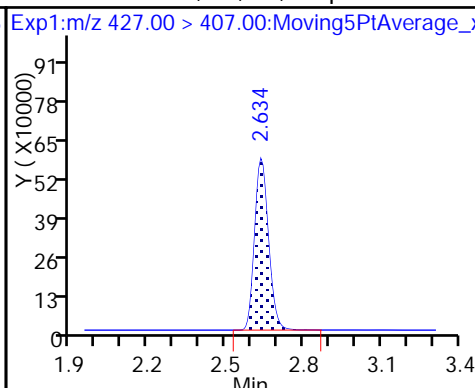
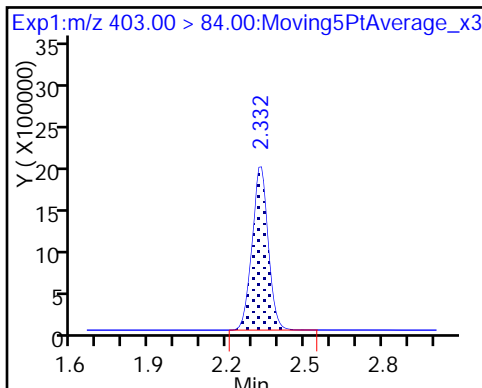
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecane

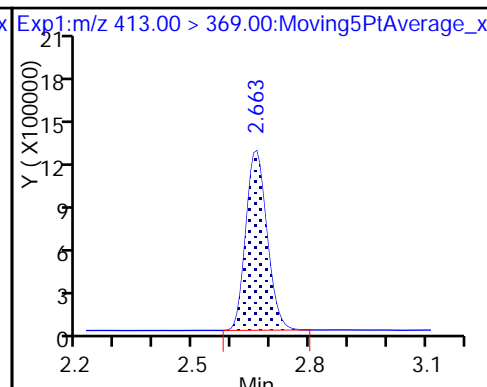
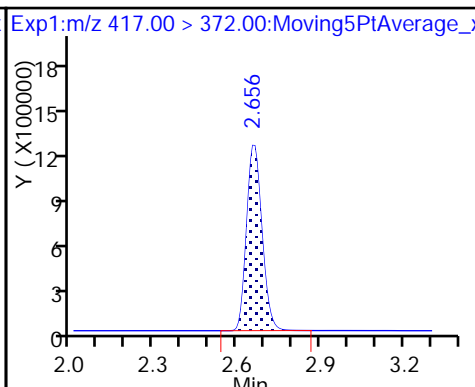
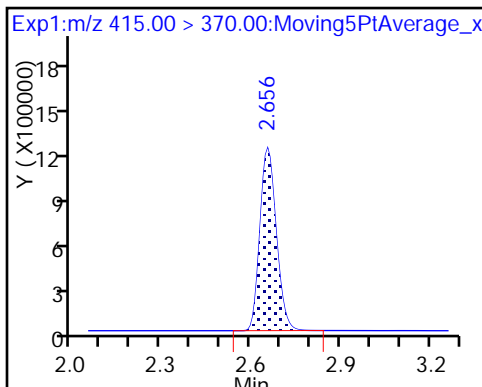
D 12 M2-6:2FTS



* 62 13C2-PFOA

D 14 13C4 PFOA

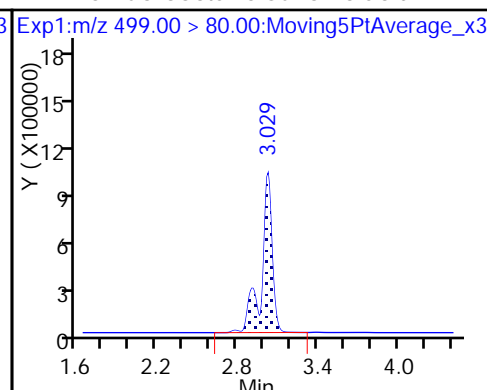
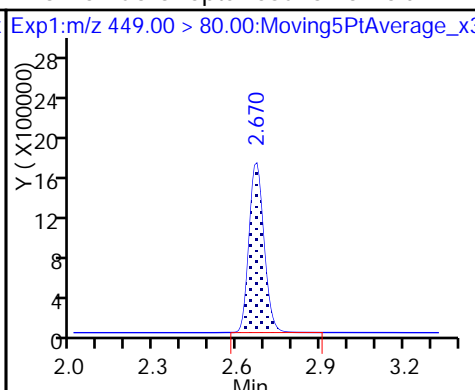
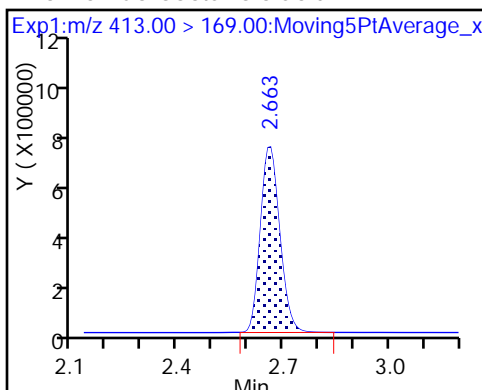
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

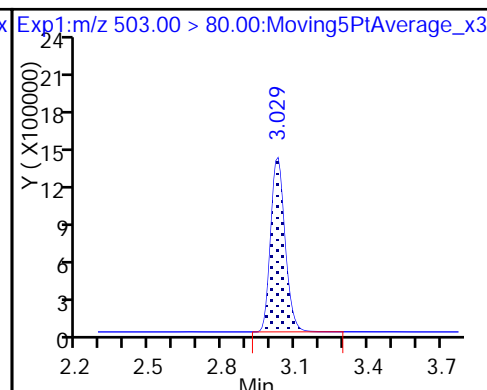
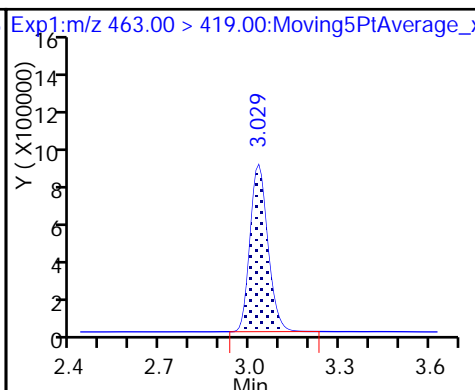
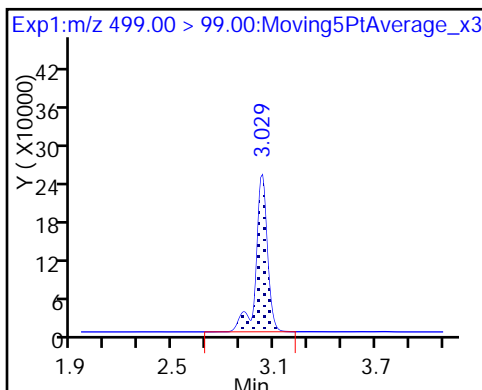
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

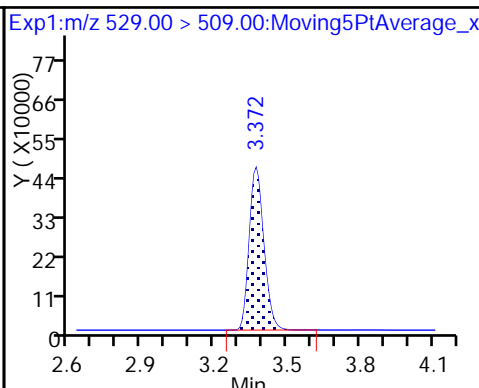
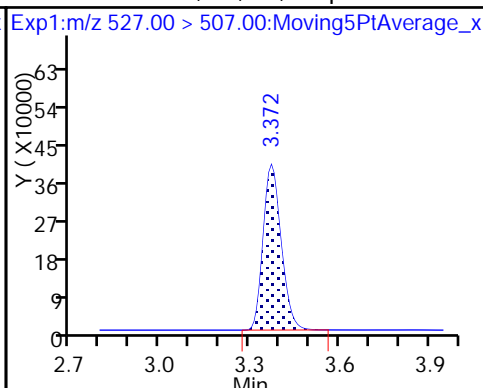
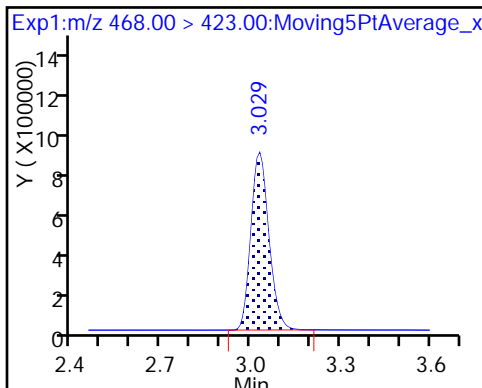
D 18 13C4 PFOS



D 19 13C5 PFNA

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

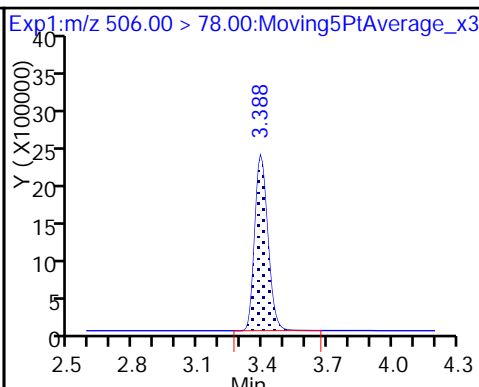
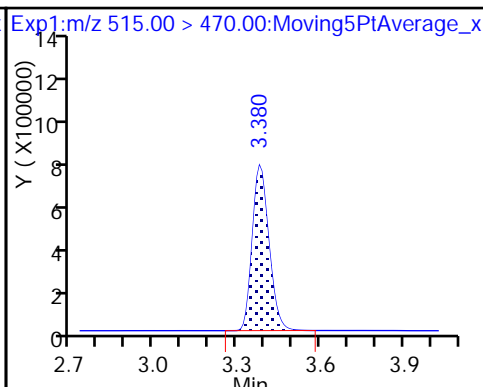
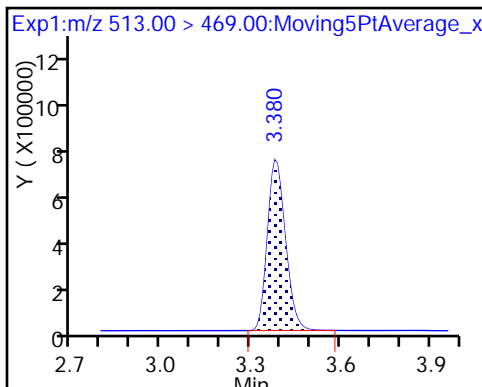
De26 M2-8:2FTS



24 Perfluorodecanoic acid

D 23 13C2 PFDA

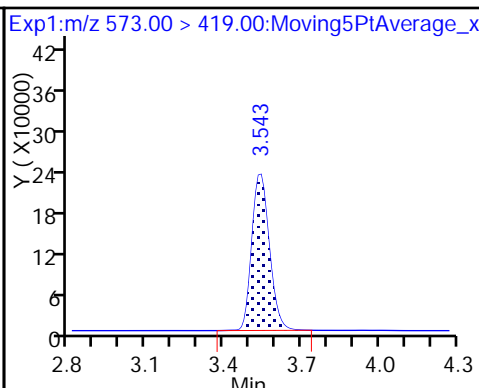
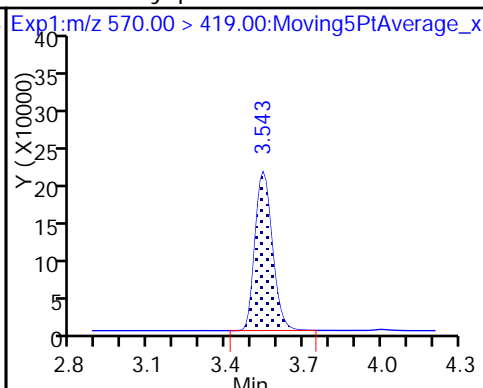
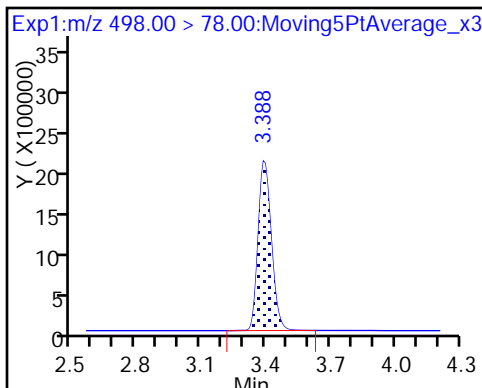
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

28 N-methyl perfluorooctane sulfonamide

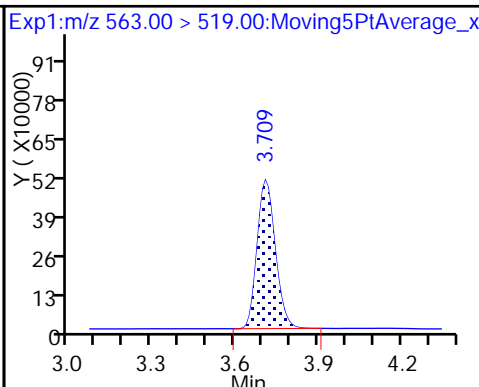
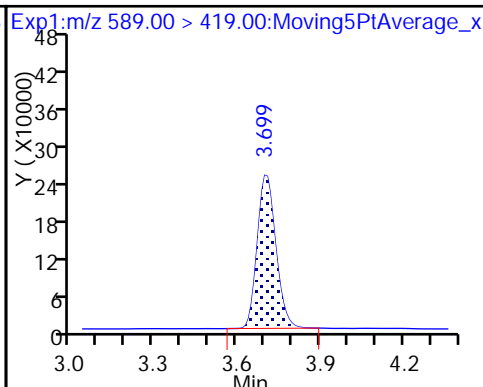
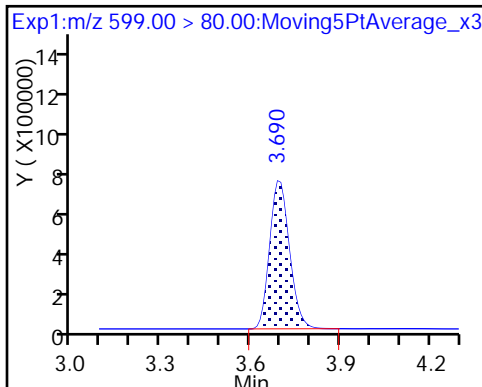
D 27 d3-NMeFOSAA



29 Perfluorodecane Sulfonic acid

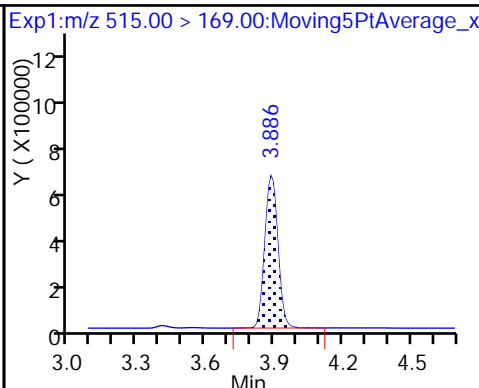
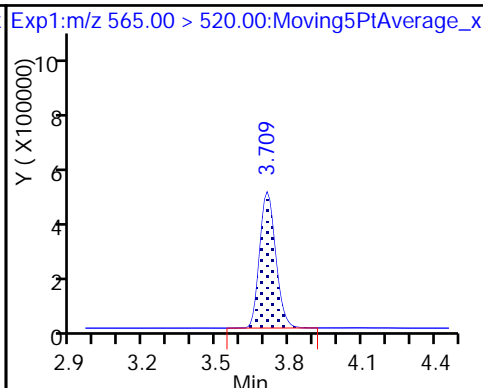
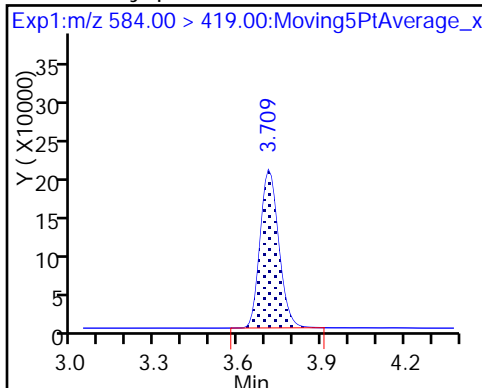
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUa

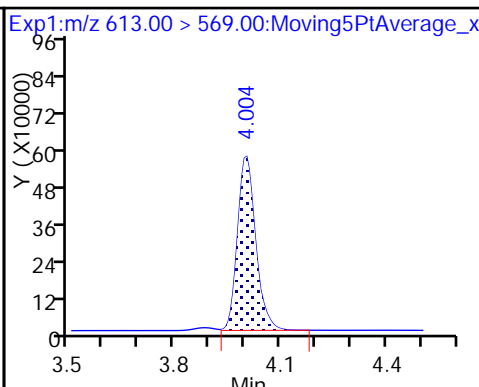
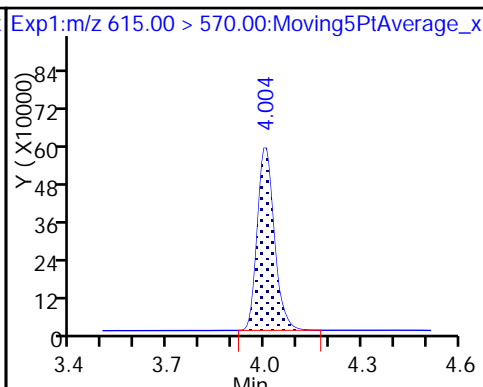
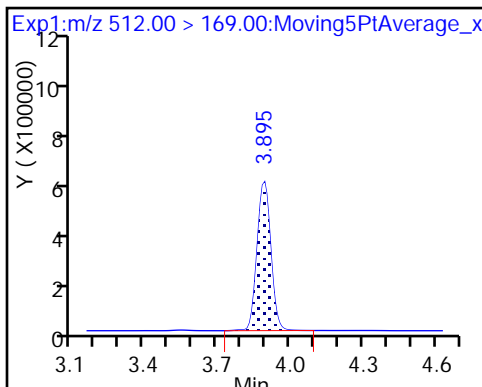
D 34 d-N-MeFOSA-M



35 MeFOSA

D 36 13C2 PFDa

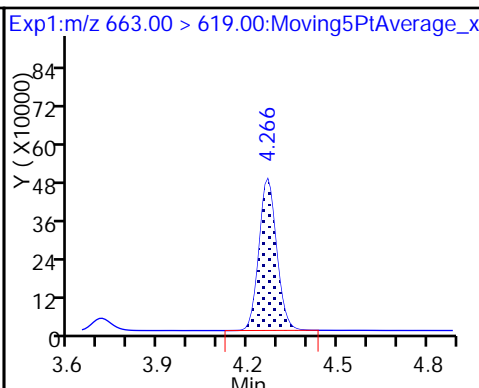
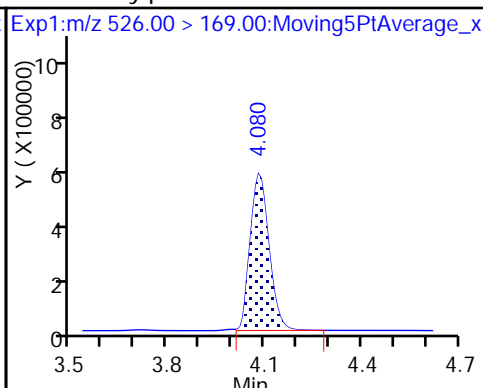
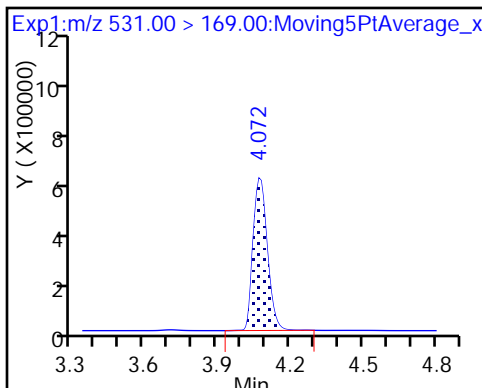
37 Perfluorododecanoic acid



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

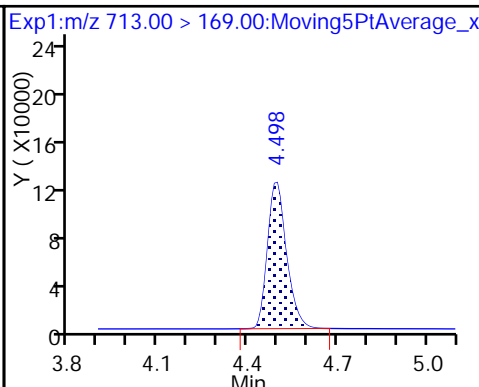
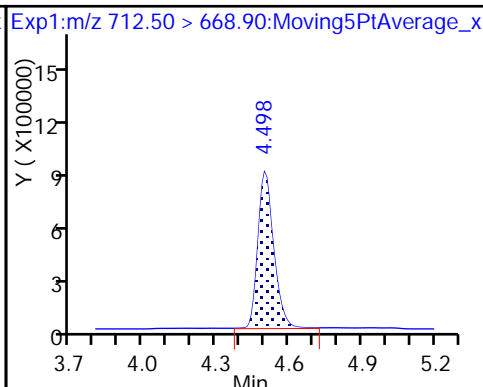
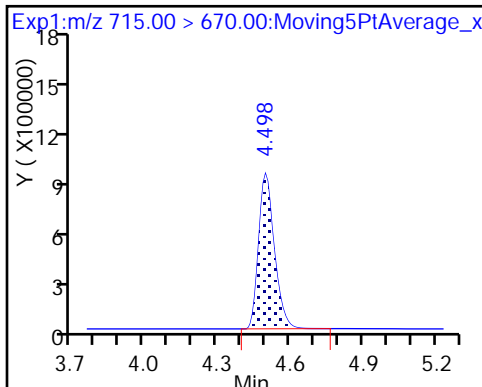
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

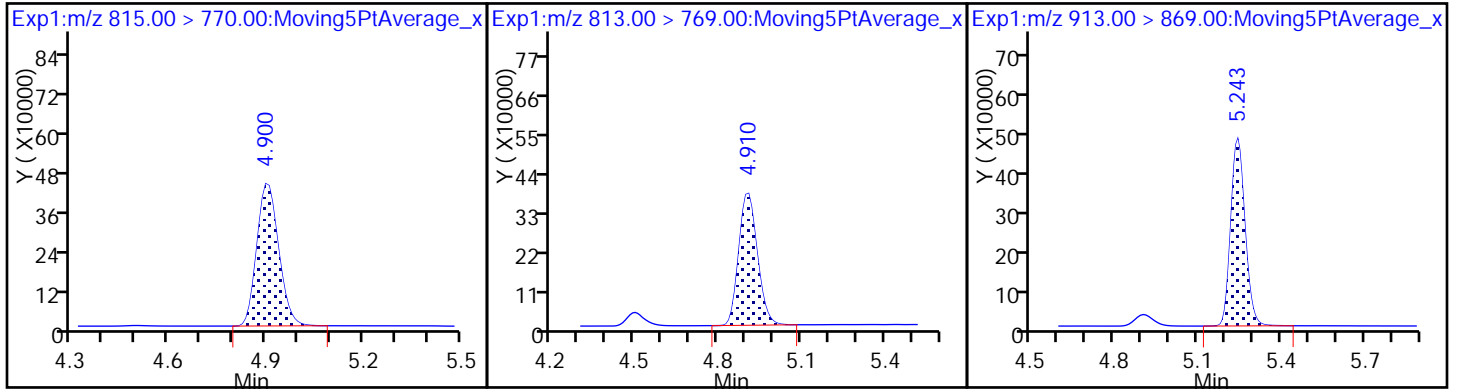
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: ICV 320-175476/12 Calibration Date: 07/23/2017 14:12
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23ICAL_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9506 | | 53.4 | 49.5 | 7.8 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.048 | | 49.8 | 49.5 | 0.6 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.590 | | 46.8 | 43.8 | 6.8 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 1.064 | | 55.3 | 49.5 | 11.7 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.096 | | 52.9 | 49.5 | 6.8 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.064 | | 46.0 | 46.8 | -1.7 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8826 | | 46.2 | 46.9 | -1.5 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.145 | | 53.1 | 49.5 | 7.3 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.189 | | 50.0 | 47.1 | 6.0 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 1.057 | | 51.4 | 49.5 | 3.8 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 0.9909 | | 44.3 | 47.3 | -6.3 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 1.006 | | 55.2 | 49.5 | 11.5 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9482 | | 49.4 | 47.4 | 4.1 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 1.021 | | 51.6 | 49.5 | 4.2 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 1.004 | | 54.6 | 49.5 | 10.3 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.7165 | | 55.0 | 47.8 | 15.1 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.9413 | | 54.9 | 49.5 | 10.9 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.065 | | 51.3 | 49.5 | 3.6 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.9367 | | 50.5 | 49.5 | 2.0 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 1.075 | | 57.3 | 49.5 | 15.7 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 1.041 | | 55.6 | 49.5 | 12.2 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.9886 | | 57.5 | 49.5 | 16.1 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.177 | | 56.1 | 49.5 | 13.3 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8767 | | 54.2 | 49.5 | 9.4 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8436 | | 54.6 | 49.5 | 10.2 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 157873 | | 50.1 | 49.5 | 1.2 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 108697 | | 48.7 | 49.5 | -1.6 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 98061 | | 48.0 | 49.5 | -3.1 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 83605 | | 49.4 | 49.5 | -0.3 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 142796 | | 48.7 | 46.8 | 3.9 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 48376 | | 47.8 | 47.0 | 1.7 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: ICV 320-175476/12 Calibration Date: 07/23/2017 14:12
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23ICAL_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|-------|--------|
| 13C4 PFOA | Ave | 82143 | 77215 | | 46.5 | 49.5 | -6.0 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 104794 | | 45.8 | 47.3 | -3.1 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 60434 | | 45.5 | 49.5 | -8.1 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 161974 | | 43.9 | 49.5 | -11.4 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 35620 | | 46.3 | 47.4 | -2.4 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 55227 | | 49.0 | 49.5 | -1.1 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 20364 | | 46.4 | 49.5 | -6.3 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 38417 | | 46.7 | 49.5 | -5.7 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 21506 | | 48.5 | 49.5 | -1.9 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 46615 | | 49.0 | 49.5 | -1.1 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 37731 | | 41.8 | 49.5 | -15.5 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 45694 | | 46.3 | 49.5 | -6.4 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 74362 | | 45.3 | 49.5 | -8.4 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 34907 | | 41.8 | 49.5 | -15.5 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_012.d
 Lims ID: ICV Full
 Client ID:
 Sample Type: ICV
 Inject. Date: 23-Jul-2017 14:12:14 ALS Bottle#: 36 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:
 Method: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 11:24:57 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 16:36:24

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.553 | 1.558 | -0.005 | 7815518 | 50.1 | | 101 | 39647 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.553 | 1.564 | -0.011 | 7429339 | 53.4 | | | 4108 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.772 | 1.780 | -0.008 | 5381043 | 48.7 | | 98.4 | 58466 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.772 | 1.783 | -0.011 | 5641136 | 49.8 | | | 3901 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.791 | 1.806 | -0.015 | 135099 | NC | | | 6294 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.800 | 1.808 | -0.008 | 9947970 | 46.8 | | | 6044 | |
| | 298.90 > 99.00 | 1.800 | 1.808 | -0.008 | 4053649 | | 2.45(0.00-0.00) | | 5716 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.005 | 2.026 | -0.021 | 2214227 | 47.1 | | | 62916 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.051 | 2.070 | -0.019 | 4854529 | 48.0 | | 96.9 | 43967 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.051 | 2.070 | -0.019 | 5163031 | 55.3 | | | 12217 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.394 | 2.420 | -0.026 | 4536570 | 52.9 | | | 9182 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.394 | 2.420 | -0.026 | 4138864 | 49.4 | | 99.7 | 31909 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.410 | 2.436 | -0.026 | 7104884 | 46.0 | | | 5948 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.410 | 2.436 | -0.026 | 6687377 | 48.7 | | 104 | 38252 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.755 | 2.740 | 0.015 | 3952651 | 49.5 | | 29094 | |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.734 | 2.766 | -0.032 | 2275109 | 47.8 | | 102 | 26630 |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.734 | 2.766 | -0.032 | 1.000 | 2003870 | 46.2 | | 29733 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.755 | 2.793 | -0.038 | 3822549 | 46.5 | | 94.0 | 25867 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.755 | 2.794 | -0.039 | 1.000 | 4375657 | 53.1 | | 961 |
| | 413.00 | > 169.00 | 2.755 | 2.794 | -0.039 | 1.000 | 2634902 | 1.66(0.90-1.10) | | 9356 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.763 | 2.801 | -0.038 | 1.000 | 5872747 | 50.0 | | 29182 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.139 | 3.176 | -0.037 | 1.000 | 4909280 | 44.3 | | 9141 |
| | 499.00 | > 99.00 | 3.139 | 3.176 | -0.037 | 1.000 | 1181748 | 4.15(0.90-1.10) | | 30493 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.130 | 3.176 | -0.046 | 4959566 | 45.8 | | 96.9 | 16401 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.139 | 3.180 | -0.041 | 1.000 | 3161857 | 51.4 | | 6471 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.139 | 3.180 | -0.041 | 2991774 | 45.5 | | 91.9 | 14380 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.479 | 3.505 | -0.026 | 8018503 | 43.9 | | 88.6 | 11595 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.479 | 3.508 | -0.029 | 1.000 | 8063599 | 55.2 | | 10088 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.489 | 3.528 | -0.039 | 1689298 | 46.3 | | 97.6 | 13263 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.489 | 3.528 | -0.039 | 1.000 | 1601777 | 49.4 | | 13551 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.499 | 3.539 | -0.040 | 2734023 | 49.0 | | 98.9 | 8870 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.499 | 3.542 | -0.043 | 1.000 | 2791767 | 51.6 | | 6700 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.648 | 3.698 | -0.050 | 1008115 | 46.4 | | 93.7 | 7202 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.658 | 3.701 | -0.043 | 1.003 | 1011987 | 54.6 | | 9641 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.813 | 3.855 | -0.042 | 1.000 | 3587023 | 55.0 | | 12345 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.822 | 3.866 | -0.044 | 1064638 | 48.5 | | 98.1 | 2996 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.822 | 3.875 | -0.053 | 1901809 | 46.7 | | 94.3 | 7443 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.822 | 3.875 | -0.053 | 1.000 | 2025287 | 51.3 | | 4445 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.822 | 3.875 | -0.053 | 1.000 | 1002156 | 54.9 | | 9280 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.964 | 3.986 | -0.022 | | 2307684 | | 49.0 | 98.9 | 767 |
| 35 MeFOSA | 512.00 > 169.00 | 3.972 | 3.992 | -0.020 | 1.000 | 2161659 | | 50.5 | | 5975 |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.124 | 4.168 | -0.044 | 1.000 | 2007680 | | 57.3 | | 1954 |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.124 | 4.169 | -0.045 | | 1867874 | | 41.8 | 84.5 | 5563 |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.158 | 4.173 | -0.015 | | 2262075 | | 46.3 | 93.6 | 5002 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.158 | 4.178 | -0.020 | 1.000 | 2354694 | | 55.6 | | 5831 |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.389 | 4.434 | -0.045 | 1.000 | 1846525 | | 57.5 | | 652 |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.624 | 4.676 | -0.052 | | 3681293 | | 45.3 | 91.6 | 14361 |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.624 | 4.676 | -0.052 | 1.000 | 4067134 | | 56.1 | | 337 |
| | 713.00 > 169.00 | 4.624 | 4.676 | -0.052 | 1.000 | 538736 | 7.55(0.00-0.00) | | | 5878 |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.043 | 5.091 | -0.048 | | 1728082 | | 41.8 | 84.5 | 4254 |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.043 | 5.092 | -0.049 | 1.000 | 1637541 | | 54.2 | | 314 |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.397 | 5.458 | -0.061 | 1.000 | 1575707 | | 54.6 | | 669 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_FULL_00003

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_012.d

Injection Date: 23-Jul-2017 14:12:14

Instrument ID: A8_N

Lims ID: ICV Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

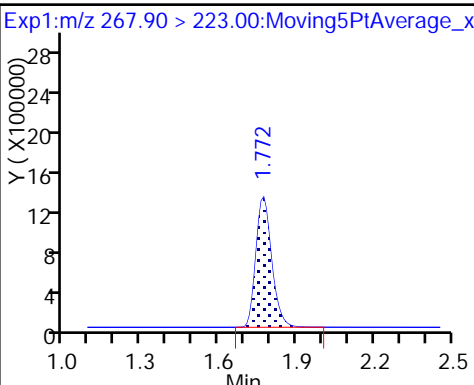
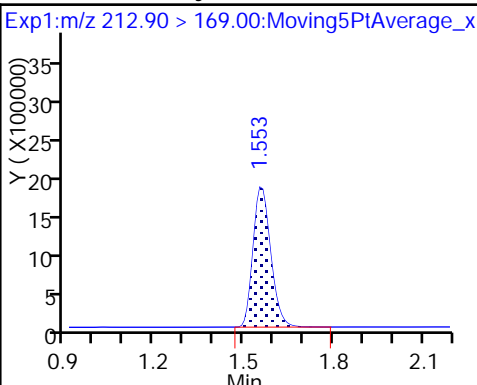
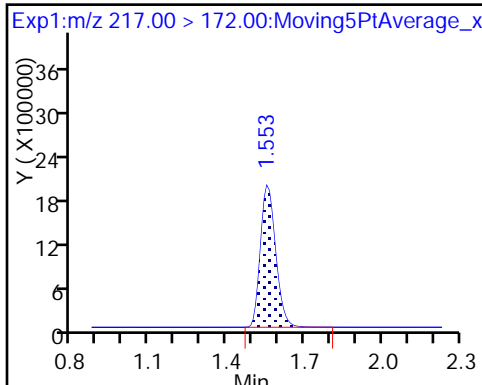
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

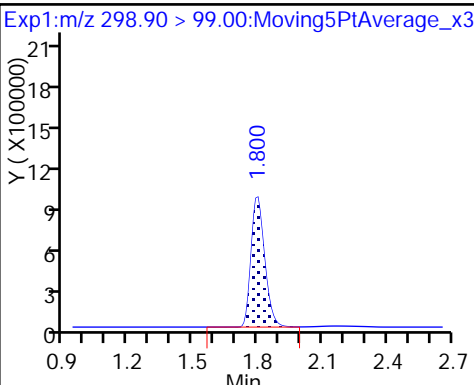
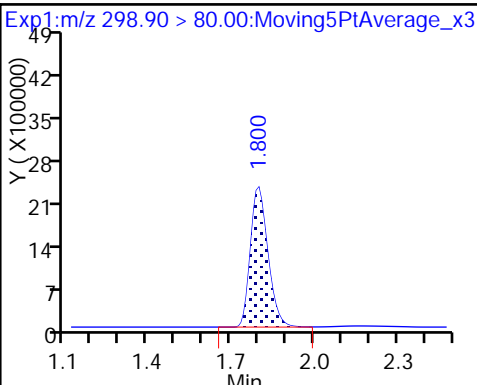
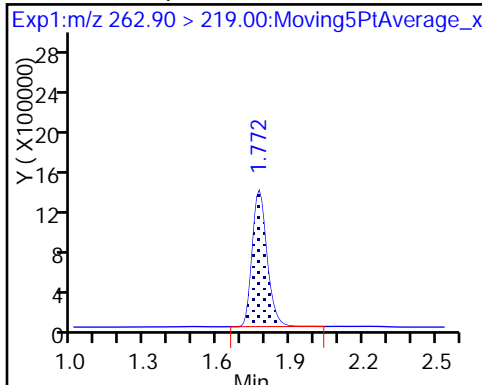
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

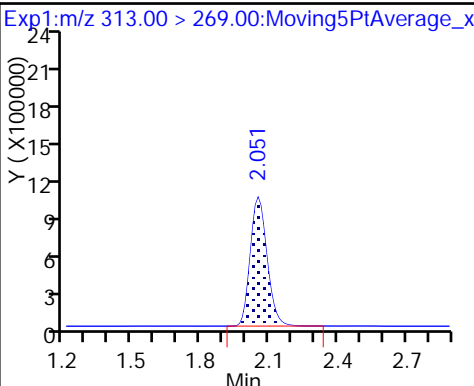
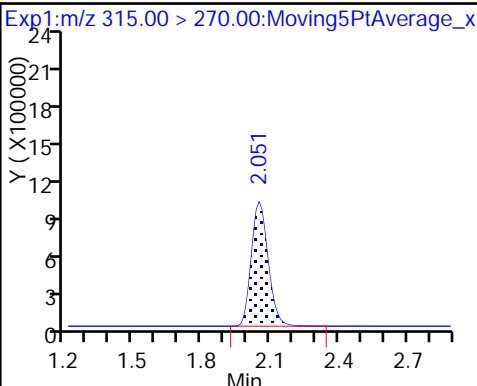
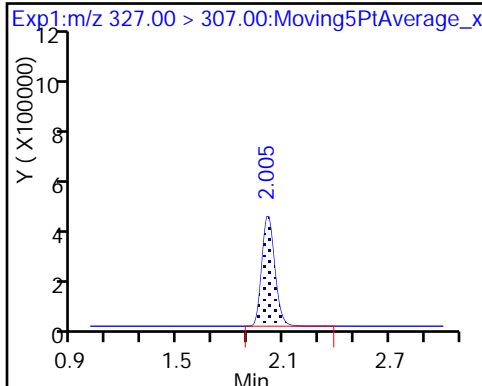
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

D 7 13C2 PFHxA

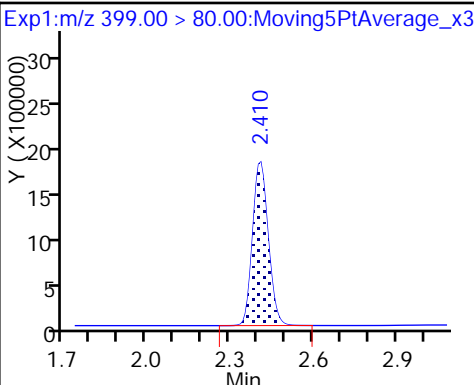
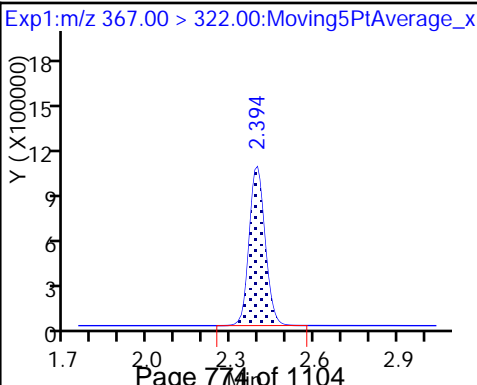
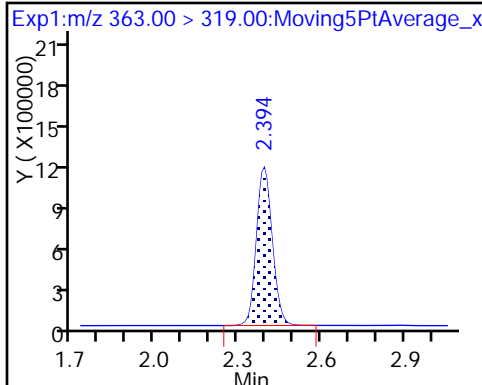
6 Perfluorohexanoic acid



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

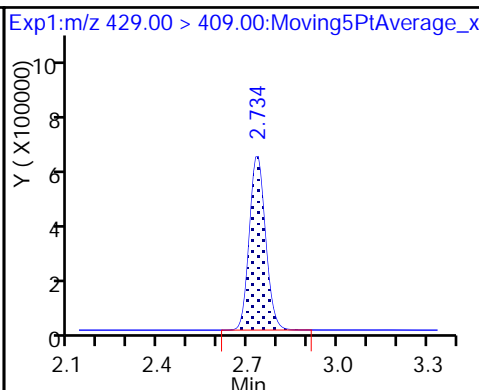
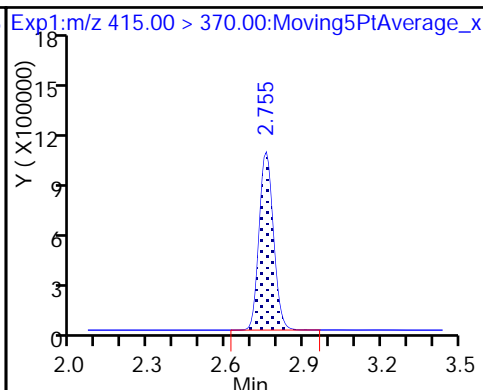
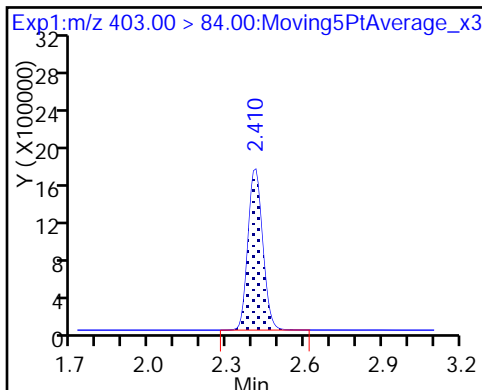
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

* 62 13C2-PFOA

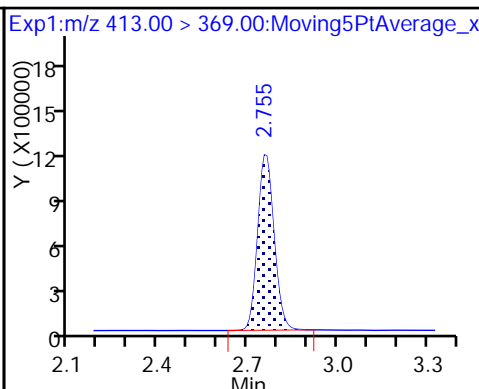
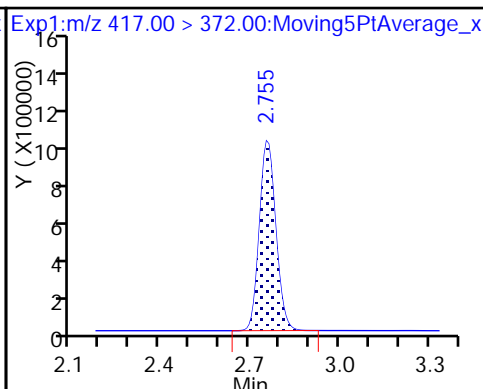
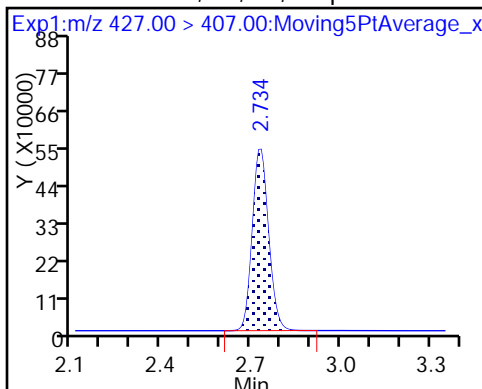
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctadecanoic acid

D 14 13C4 PFOA

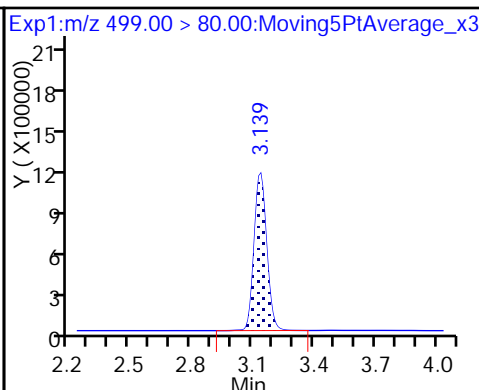
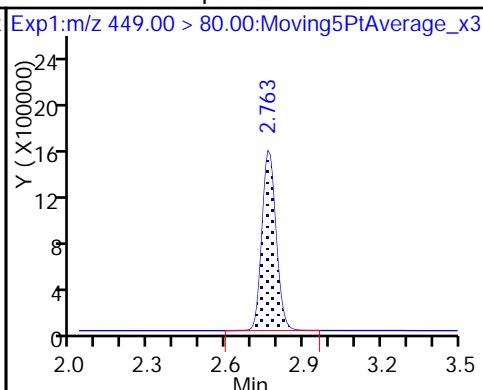
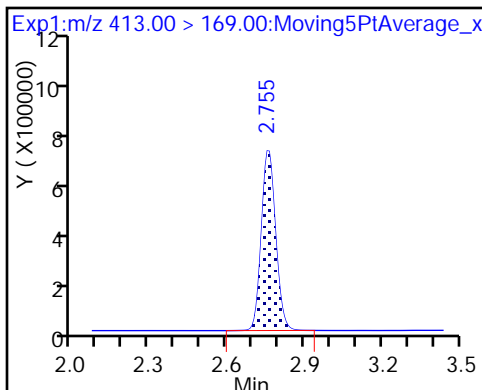
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

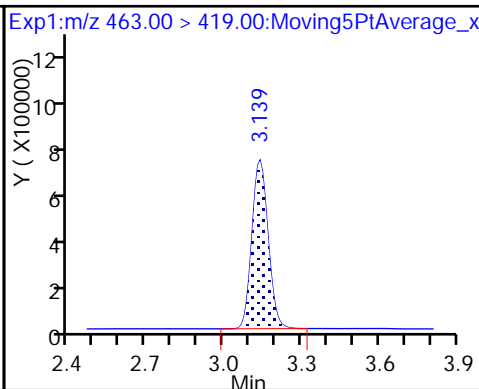
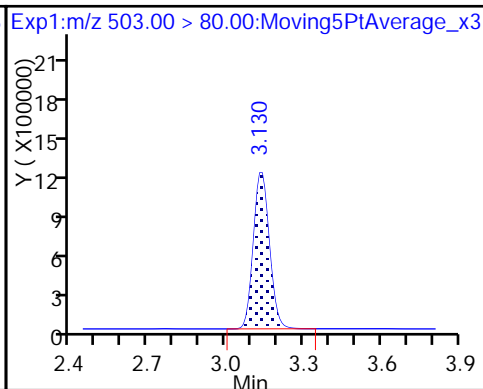
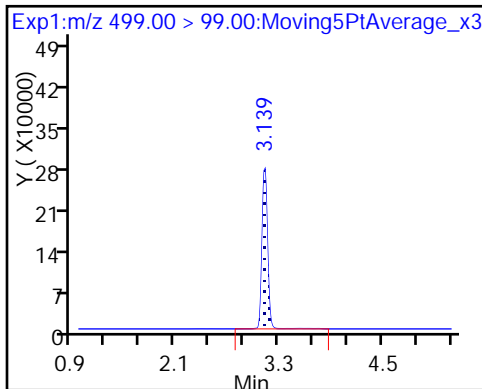
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 18 13C4 PFOS

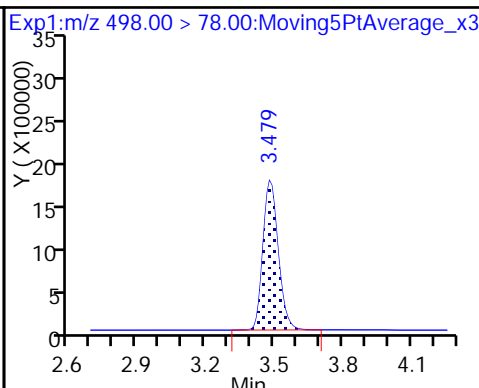
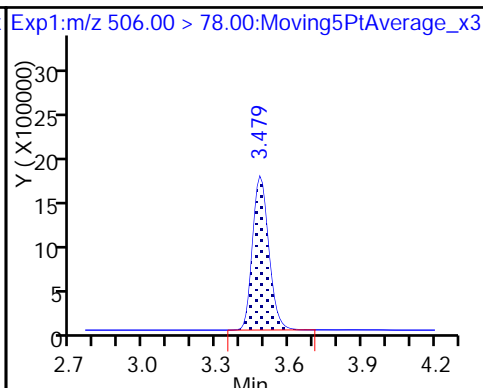
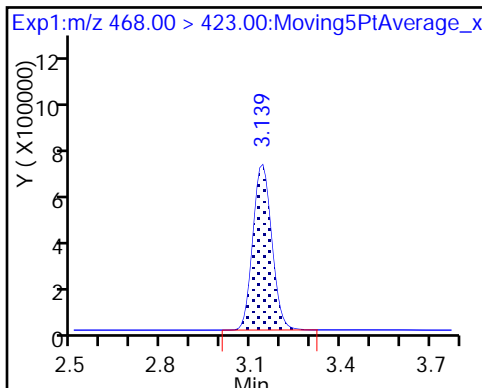
20 Perfluorononanoic acid



D 19 13C5 PFNA

D 21 13C8 FOSA

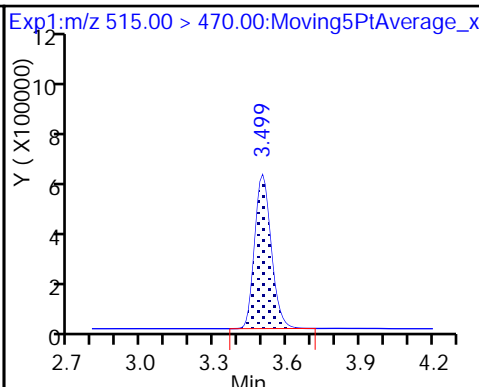
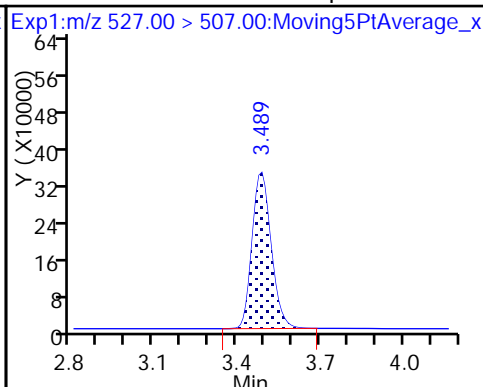
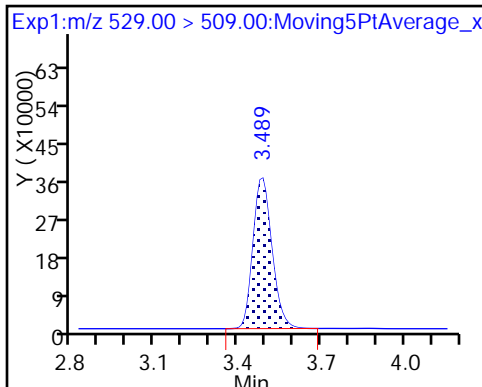
22 Perfluorooctane Sulfonamide



D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

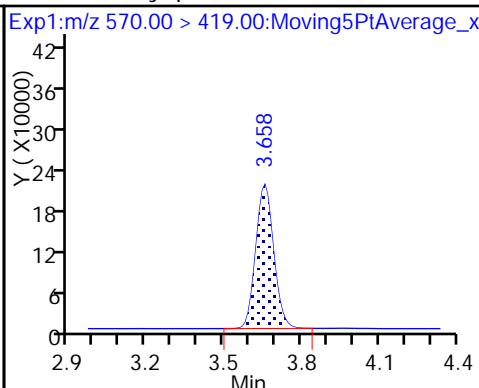
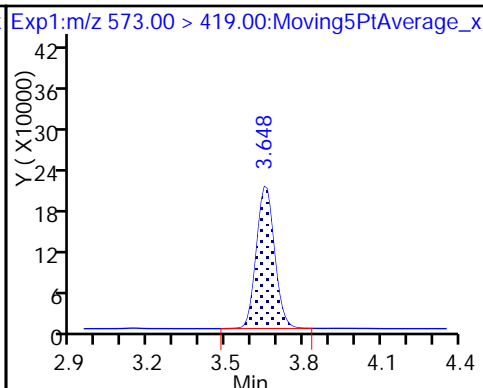
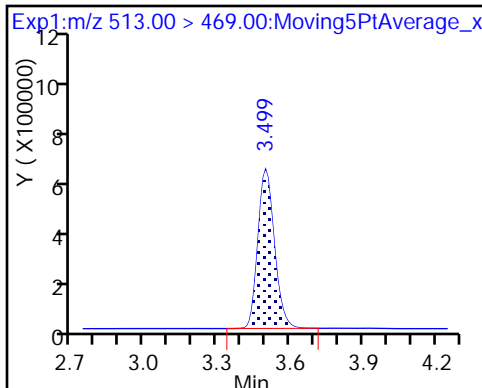
De23 13C2 PFDA



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

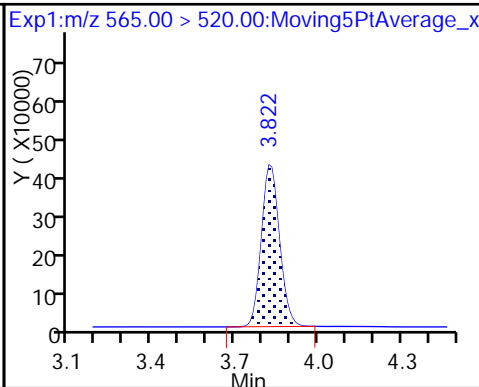
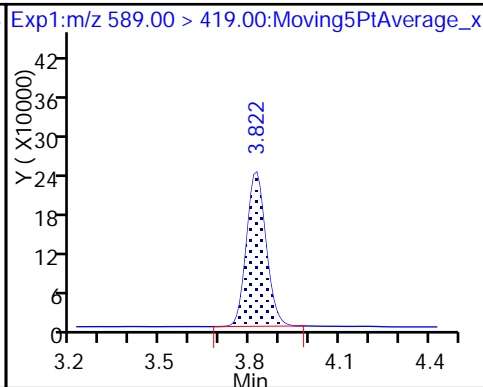
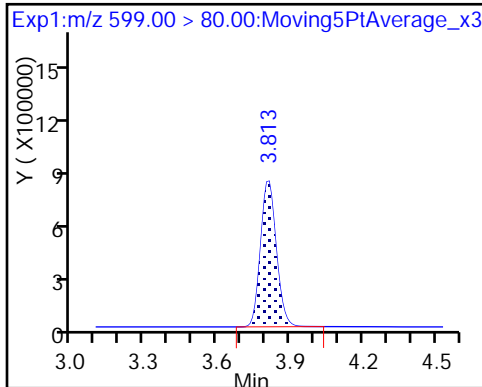
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

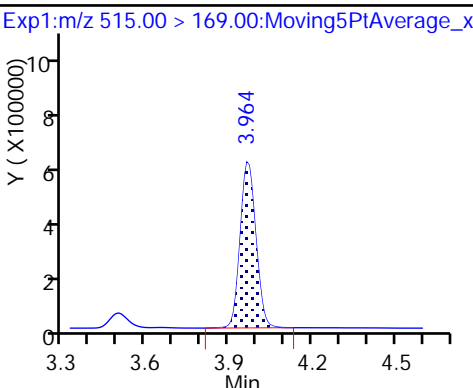
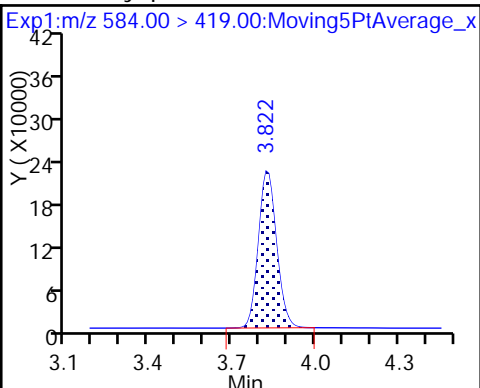
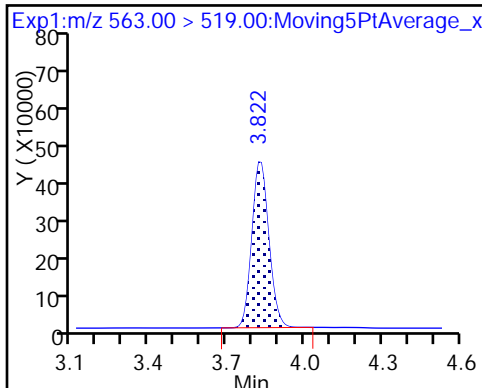
D 30 13C2 PFUnA



31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid D

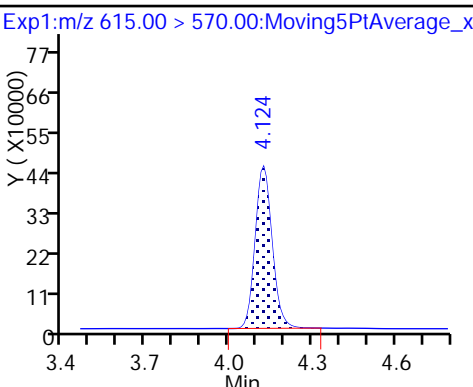
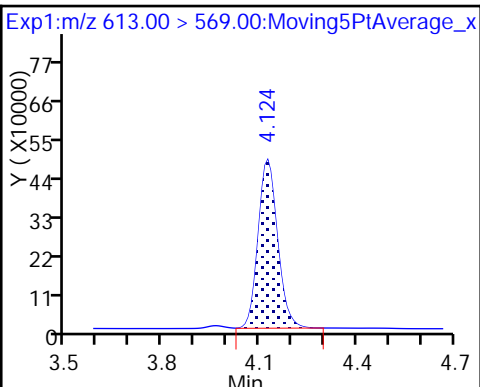
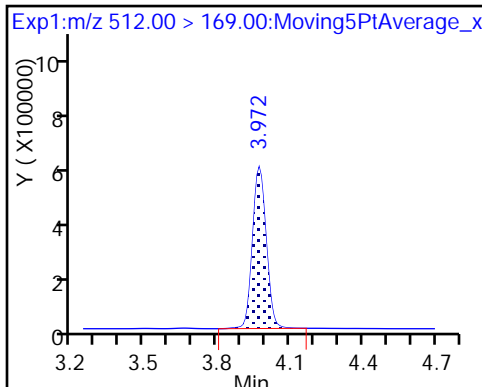
34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

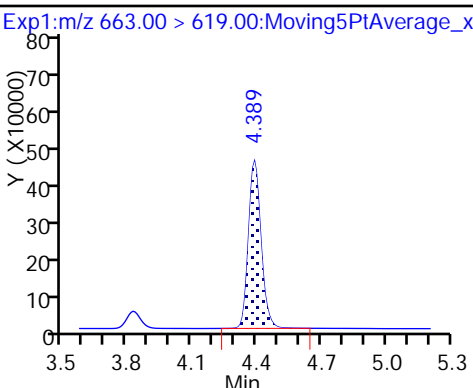
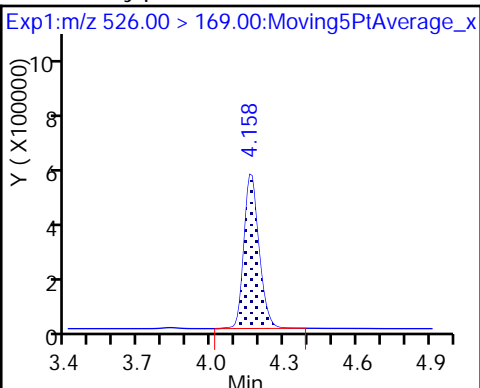
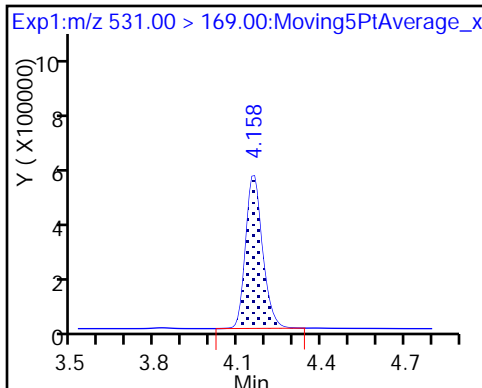
D 36 13C2 PFDaA



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

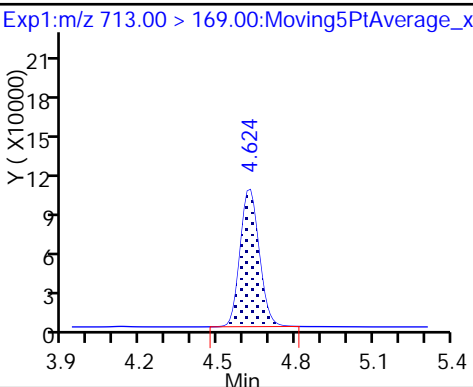
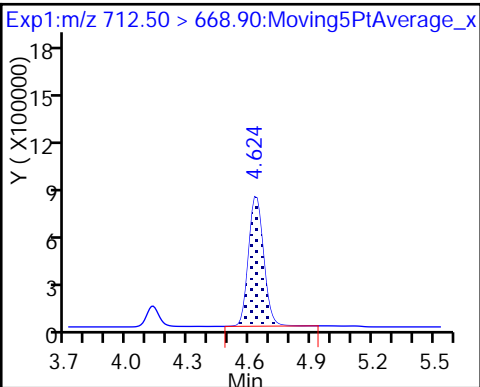
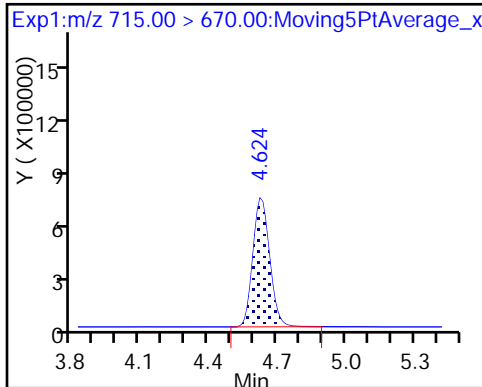
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

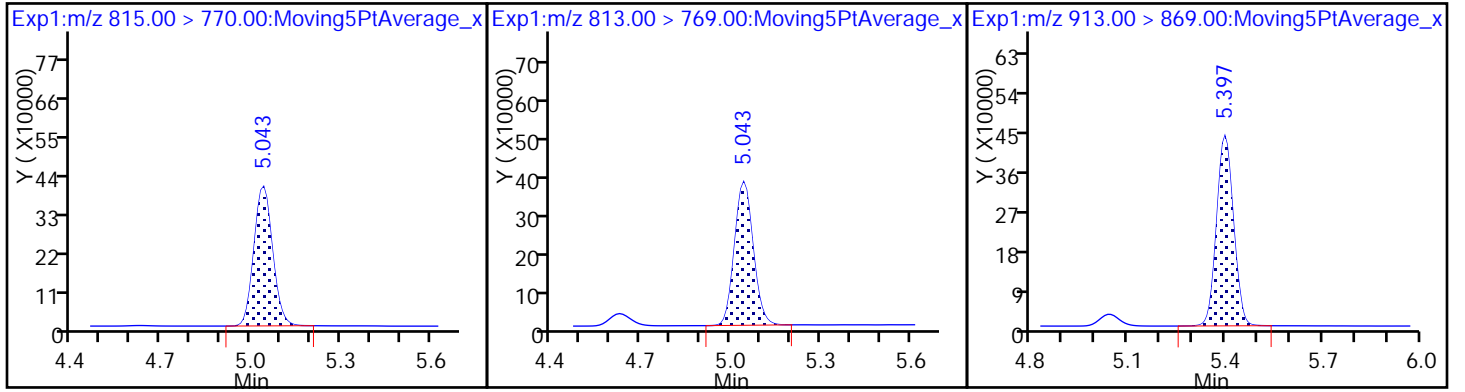
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/1 Calibration Date: 07/23/2017 14:32
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9494 | | 21.5 | 20.0 | 7.6 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 0.9792 | | 18.8 | 20.0 | -6.0 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.501 | | 17.8 | 17.7 | 0.8 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9645 | | 20.3 | 20.0 | 1.3 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.025 | | 20.0 | 20.0 | -0.1 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.015 | | 17.1 | 18.2 | -6.2 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.9016 | | 19.1 | 19.0 | 0.6 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.185 | | 20.1 | 19.0 | 5.6 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.072 | | 20.1 | 20.0 | 0.5 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.023 | | 18.0 | 18.6 | -3.2 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9787 | | 19.2 | 20.0 | -3.9 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9893 | | 20.8 | 19.2 | 8.6 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9496 | | 21.1 | 20.0 | 5.3 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9576 | | 19.5 | 20.0 | -2.3 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9797 | | 21.5 | 20.0 | 7.7 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6356 | | 19.7 | 19.3 | 2.1 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8613 | | 20.3 | 20.0 | 1.5 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 0.9846 | | 19.1 | 20.0 | -4.5 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.9054 | | 19.7 | 20.0 | -1.4 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.8874 | | 19.1 | 20.0 | -4.5 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.8972 | | 19.3 | 20.0 | -3.3 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8317 | | 19.5 | 20.0 | -2.3 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.773 | | 18.4 | 20.0 | -7.8 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8414 | | 20.6 | 20.0 | 2.9 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.7982 | | 20.9 | 20.0 | 4.3 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 165858 | | 53.2 | 50.0 | 6.3 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 115893 | | 52.4 | 50.0 | 4.9 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 100943 | | 49.9 | 50.0 | -0.2 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 86101 | | 51.4 | 50.0 | 2.7 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 143304 | | 49.3 | 47.3 | 4.3 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 46861 | | 46.8 | 47.5 | -1.5 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/1 Calibration Date: 07/23/2017 14:32
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 85050 | | 51.8 | 50.0 | 3.5 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 109417 | | 48.3 | 47.8 | 1.1 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 69516 | | 52.9 | 50.0 | 5.7 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 182496 | | 49.9 | 50.0 | -0.2 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 34084 | | 44.7 | 47.9 | -6.6 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 57163 | | 51.2 | 50.0 | 2.4 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 20701 | | 47.6 | 50.0 | -4.7 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 39583 | | 48.6 | 50.0 | -2.8 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 21686 | | 49.4 | 50.0 | -1.1 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 45773 | | 48.6 | 50.0 | -2.8 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 41237 | | 46.2 | 50.0 | -7.7 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 48692 | | 49.9 | 50.0 | -0.3 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 74066 | | 45.6 | 50.0 | -8.8 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 39421 | | 47.7 | 50.0 | -4.6 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_001.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 23-Jul-2017 14:32:56 ALS Bottle#: 31 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 12:07:17 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK004

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.556 | 1.556 | 0.0 | 1.000 | 3149223 | 21.5 | 108 | 1910 | |
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.556 | 1.556 | 0.0 | | 8292923 | 53.2 | 106 | 45838 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.775 | 1.775 | 0.0 | 1.000 | 2269540 | 18.8 | 94.0 | 1530 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.766 | 1.775 | -0.009 | | 5794627 | 52.4 | 105 | 71537 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.793 | 1.793 | 0.0 | | 140162 | NC | | 8081 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.793 | 1.802 | -0.009 | 1.000 | 3801969 | 17.8 | 101 | 2351 | |
| | 298.90 > 99.00 | 1.793 | 1.802 | -0.009 | 1.000 | 1506976 | 2.52(0.00-0.00) | | 2278 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.009 | 2.020 | -0.011 | 1.000 | 830836 | 18.3 | 97.7 | 27609 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.055 | 2.055 | -0.001 | 1.000 | 1947130 | 20.3 | 101 | 6453 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.055 | 2.055 | -0.001 | | 5047173 | 49.9 | 99.8 | 50154 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.400 | 2.403 | -0.003 | 1.000 | 1765612 | 20.0 | 99.9 | 6521 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.400 | 2.403 | -0.003 | | 4305065 | 51.4 | 103 | 27217 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.408 | 2.419 | -0.011 | 1.000 | 2646085 | 17.1 | 93.8 | 3042 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.408 | 2.419 | -0.011 | | 6778291 | 49.3 | 104 | 35577 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.740 | 2.742 | -0.002 | 1.000 | 801031 | 19.1 | 101 | 21635 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.740 | 2.742 | -0.002 | 2225896 | 46.8 | 98.5 | 31182 | |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.762 | 2.764 | -0.002 | 4107866 | 50.0 | 100 | 32844 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.769 | 2.771 | -0.002 | 1823384 | 20.1 | 100 | 415 | |
| | 413.00 | > 169.00 | 2.769 | 2.771 | -0.002 | 1088554 | 1.68(0.90-1.10) | | 7761 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.769 | 2.771 | -0.002 | 4252479 | 51.8 | 104 | 25862 | |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.769 | 2.778 | -0.009 | 2468039 | 20.1 | 106 | 21590 | |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.144 | 3.151 | -0.007 | 2077947 | 18.0 | 96.8 | 8086 | |
| | 499.00 | > 99.00 | 3.144 | 3.151 | -0.007 | 430439 | 4.83(0.90-1.10) | | 3689 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.153 | 3.151 | 0.002 | 1360672 | 19.2 | 96.1 | 4505 | |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.144 | 3.151 | -0.007 | 5230128 | 48.3 | 101 | 22994 | |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.144 | 3.151 | -0.007 | 3475812 | 52.9 | 106 | 23497 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.499 | 3.497 | 0.002 | 646049 | 20.8 | 109 | 14508 | |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.499 | 3.497 | 0.002 | 1632616 | 44.7 | 93.4 | 18170 | |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.499 | 3.507 | -0.008 | 9124786 | 49.9 | 99.8 | 15441 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.499 | 3.507 | -0.008 | 3465891 | 21.1 | 105 | 10304 | |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.508 | 3.507 | 0.001 | 2858125 | 51.2 | 102 | 9221 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.508 | 3.507 | 0.001 | 1094818 | 19.5 | 97.7 | 4588 | |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.663 | 3.658 | 0.005 | 1035044 | 47.6 | 95.3 | 9082 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.663 | 3.669 | -0.006 | 405591 | 21.5 | 108 | 7724 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.817 | 3.815 | 0.002 | 1340813 | 19.7 | 102 | 12500 | |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.835 | 3.824 | 0.011 | 1084322 | 49.4 | 98.9 | 3153 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.835 | 3.833 | 0.002 | 779495 | 19.1 | 95.5 | 1926 | |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.835 | 3.833 | 0.002 | 373576 | 20.3 | 101 | 5766 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.835 | 3.833 | 0.002 | 1979174 | 48.6 | 97.2 | 9766 | |
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.983 | 3.993 | -0.010 | 2288667 | 48.6 | 97.2 | 766 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|-------|
| 35 MeFOSA | 512.00 | > 169.00 | 3.991 | 3.993 | -0.002 | 1.000 | 828845 | 19.7 | 98.6 | 5608 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.129 | 4.123 | 0.006 | 1.000 | 731876 | 19.1 | 95.5 | 525 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.129 | 4.123 | 0.006 | | 2061840 | 46.2 | 92.3 | 7851 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.172 | 4.174 | -0.002 | | 2434621 | 49.9 | 99.7 | 5040 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.180 | 4.183 | -0.003 | 1.000 | 873698 | 19.3 | 96.7 | 4762 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.397 | 4.388 | 0.009 | 1.000 | 685950 | 19.5 | 97.7 | 206 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.637 | 4.619 | 0.019 | | 3703293 | 45.6 | 91.2 | 16748 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.637 | 4.630 | 0.007 | 1.000 | 1461845 | 18.4 | 92.2 | 123 |
| | 713.00 | > 169.00 | 4.626 | 4.630 | -0.004 | 0.998 | 212766 | | 6.87(0.00-0.00) | 3119 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.053 | 5.030 | 0.023 | 1.000 | 693899 | 20.6 | 103 | 137 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.043 | 5.030 | 0.013 | | 1971065 | 47.7 | 95.4 | 5180 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.397 | 5.381 | 0.016 | 1.000 | 658294 | 20.9 | 104 | 278 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULLL-L4_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_001.d

Injection Date: 23-Jul-2017 14:32:56

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

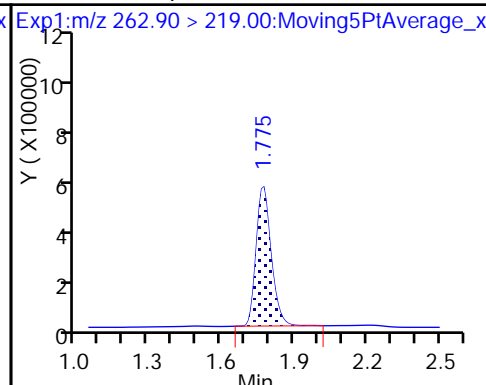
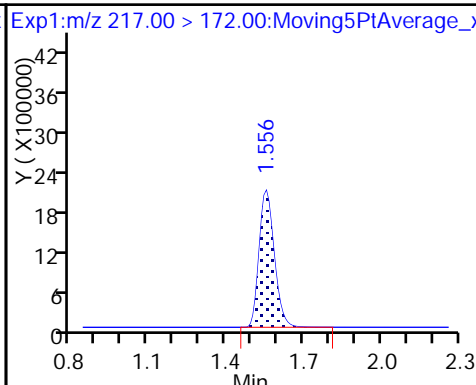
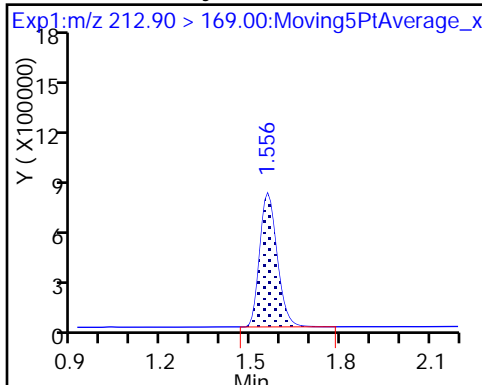
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

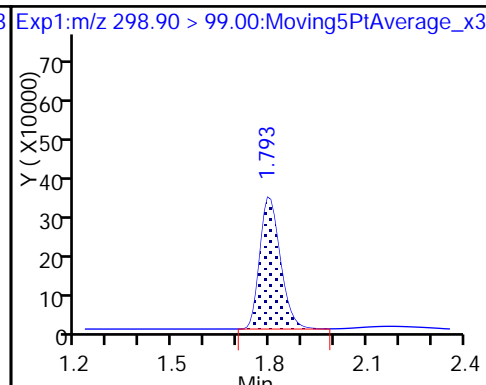
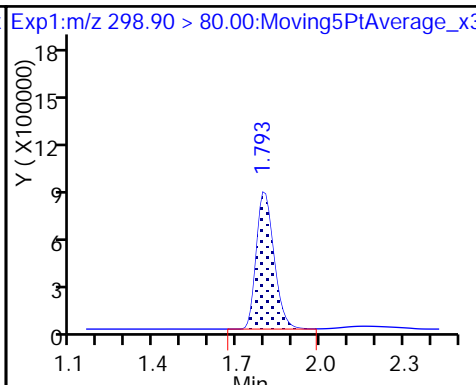
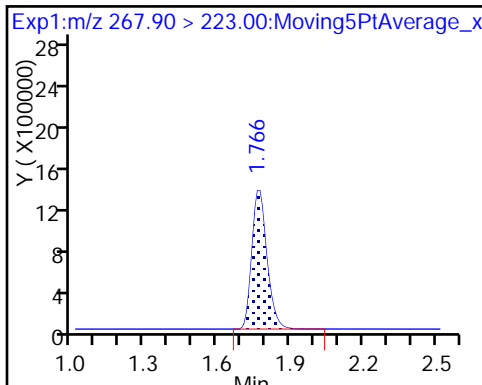
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

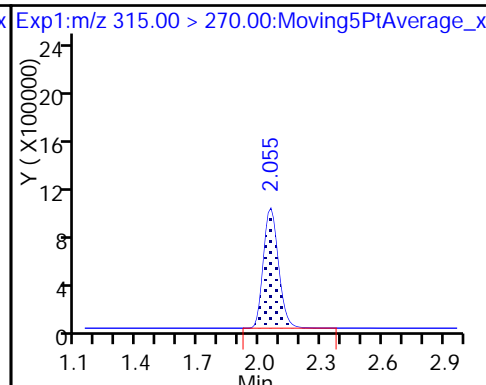
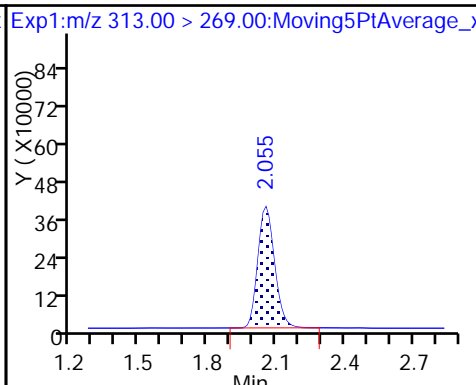
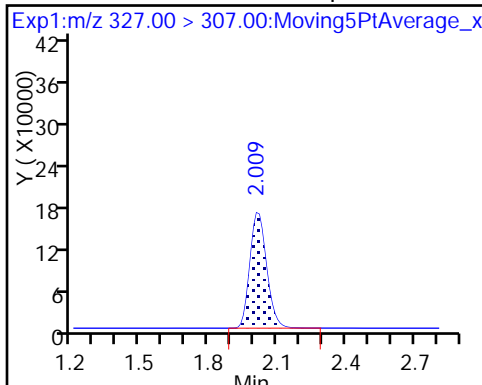
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

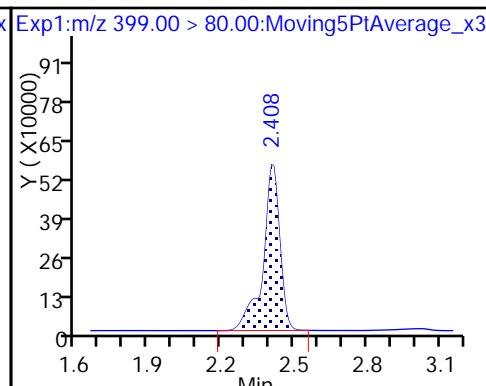
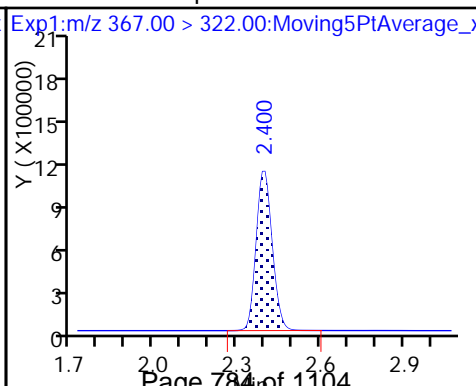
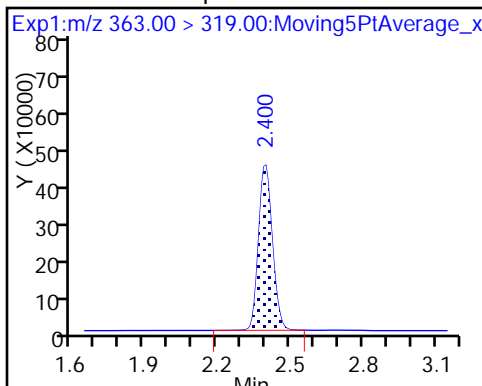
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

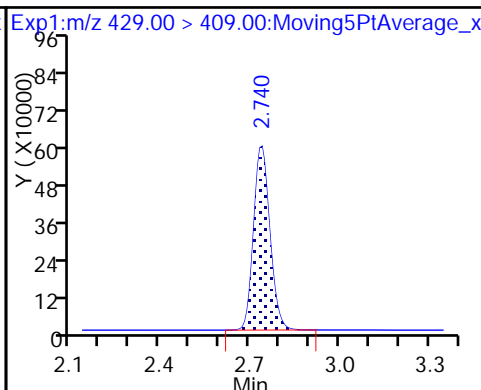
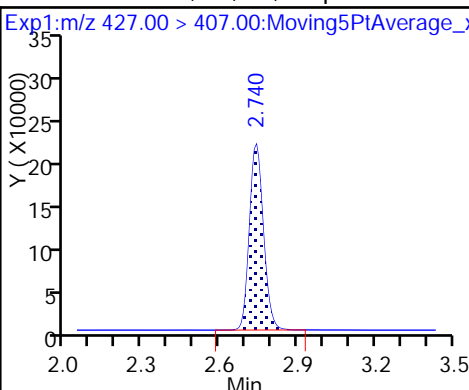
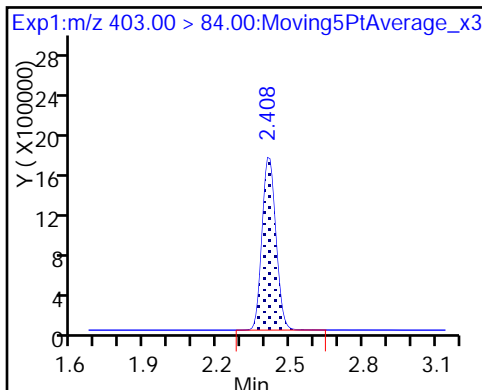
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

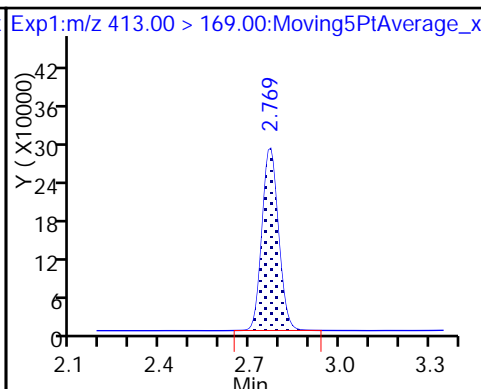
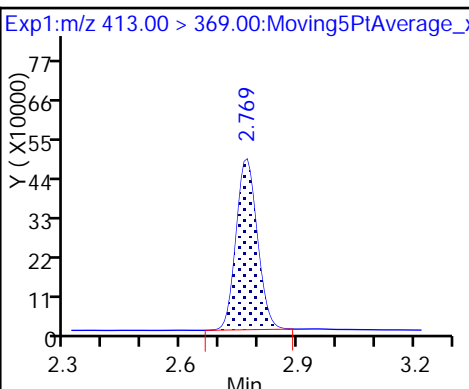
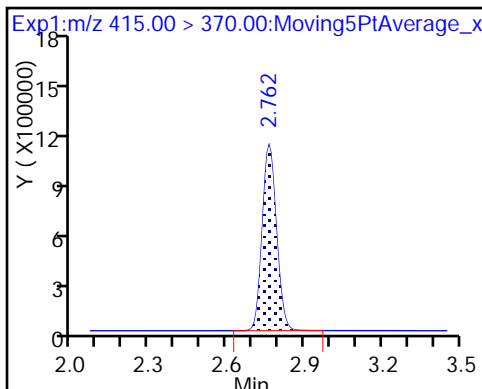
D 12 M2-6:2FTS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

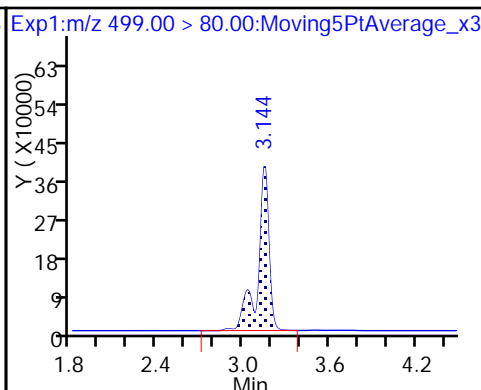
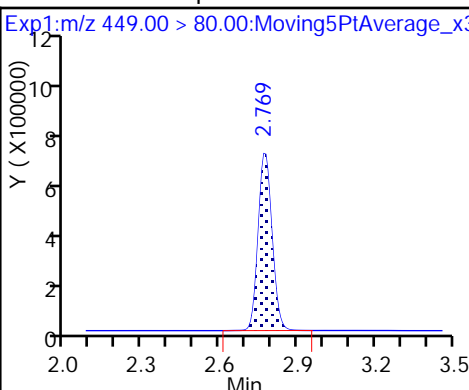
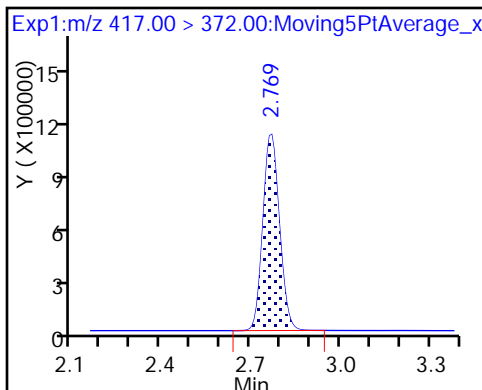
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

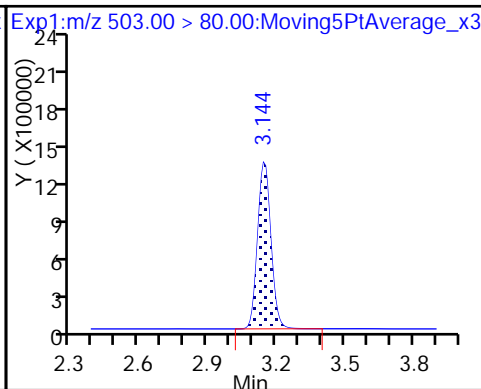
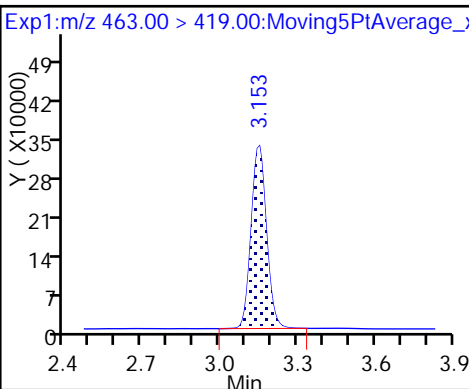
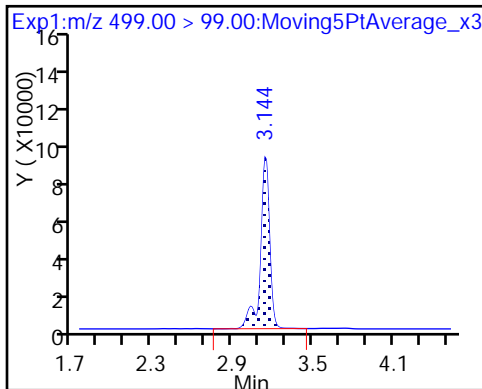
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

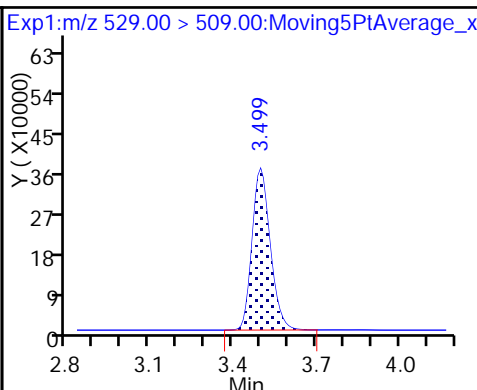
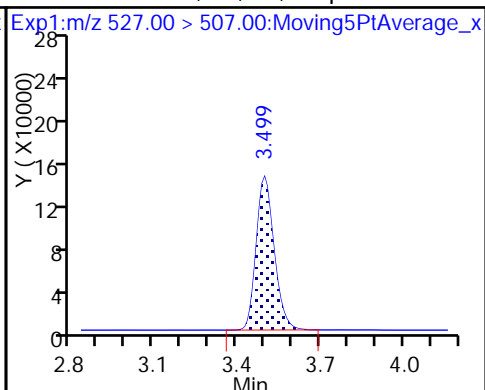
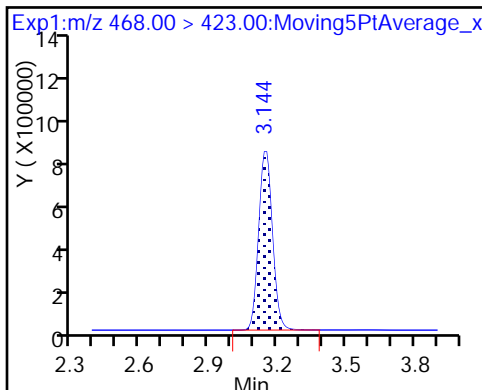
D 18 13C4 PFOS



D 19 13C5 PFNA

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

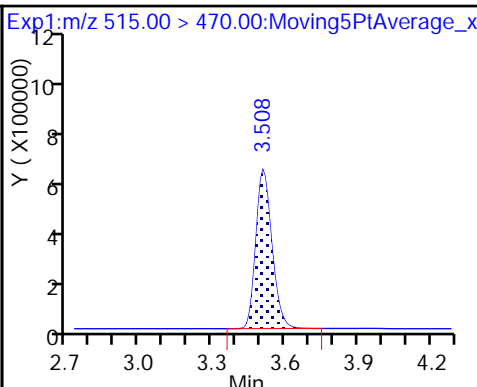
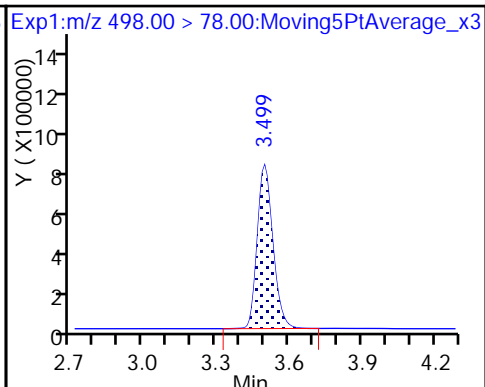
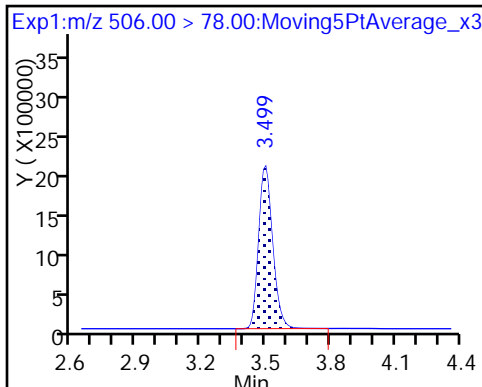
D 26 M2-8:2FTS



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

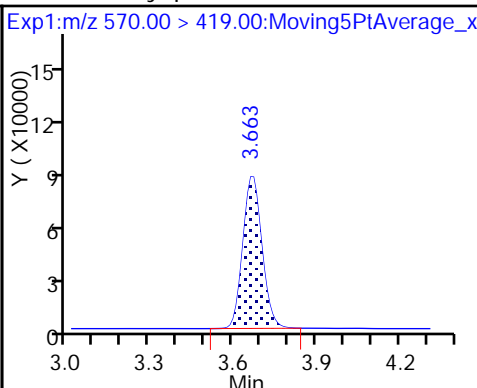
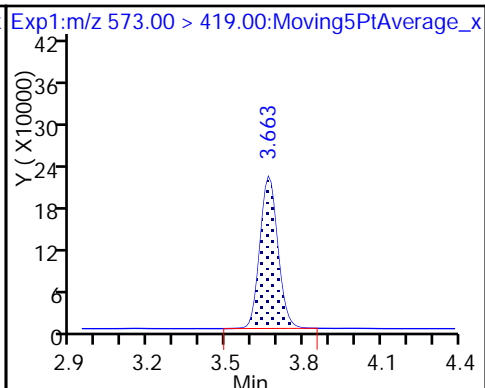
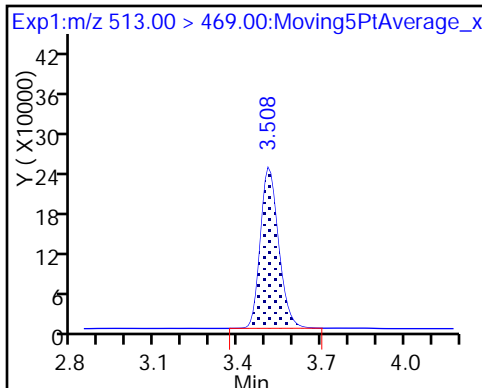
D 23 13C2 PFDA



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

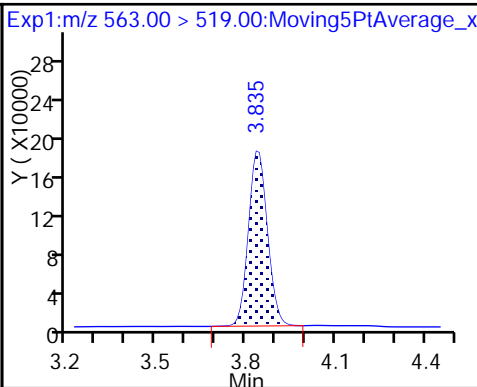
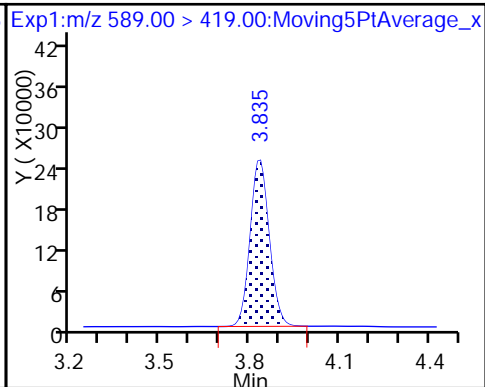
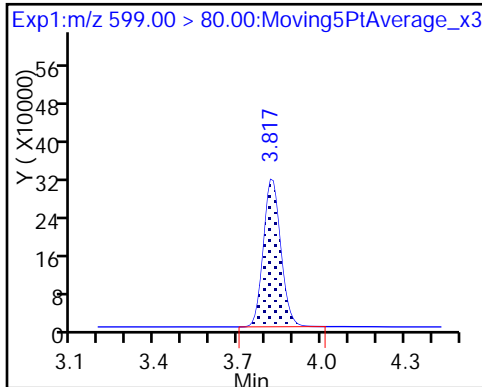
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

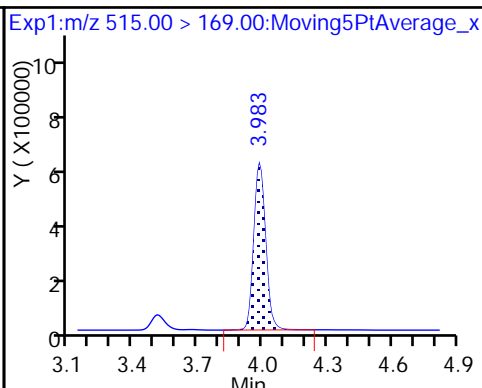
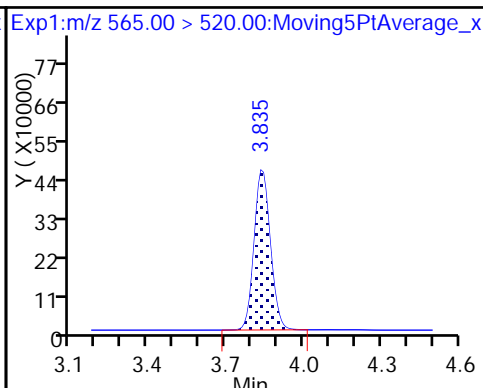
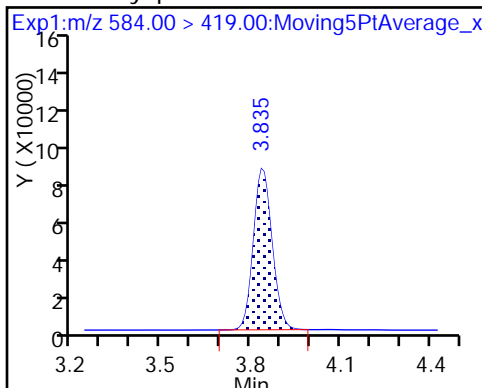
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUa

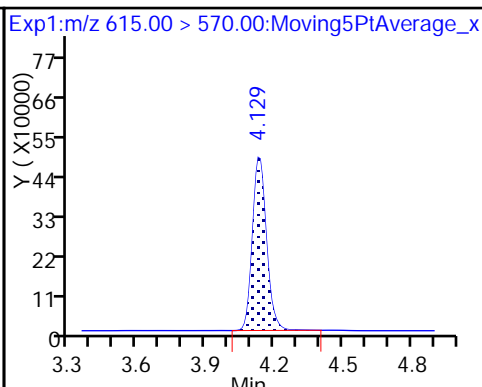
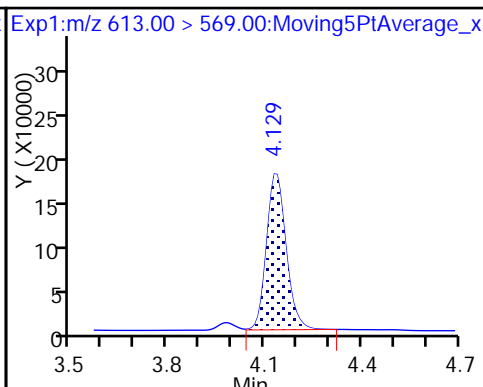
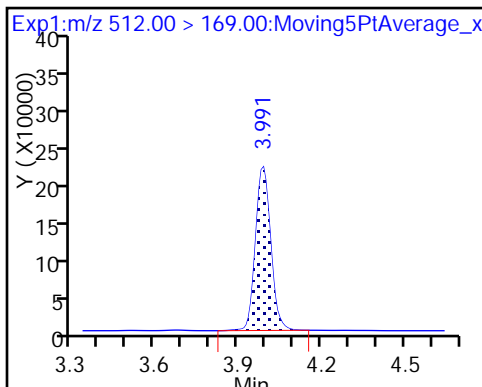
D 34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

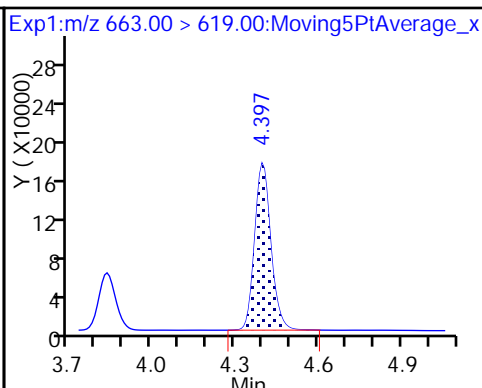
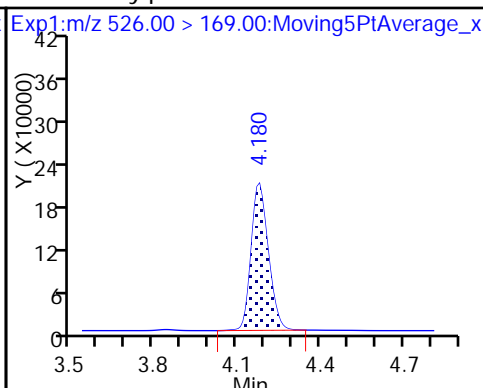
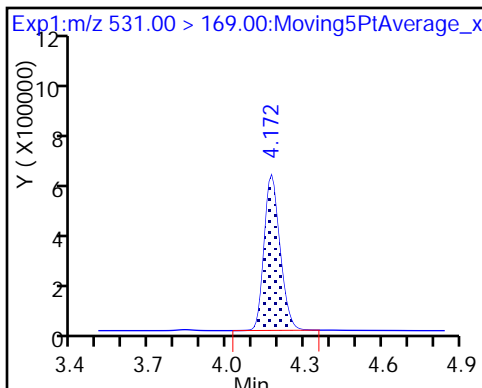
D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

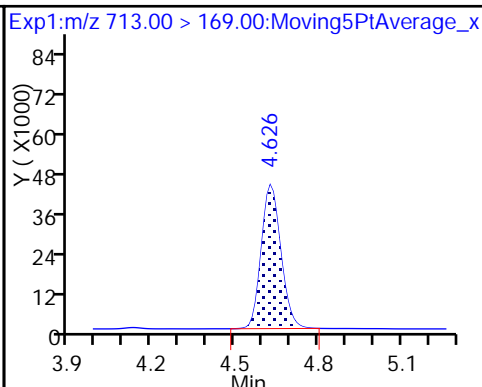
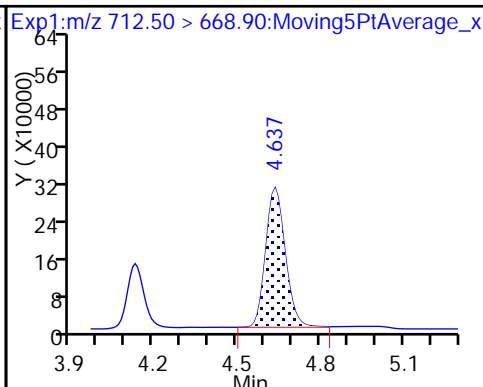
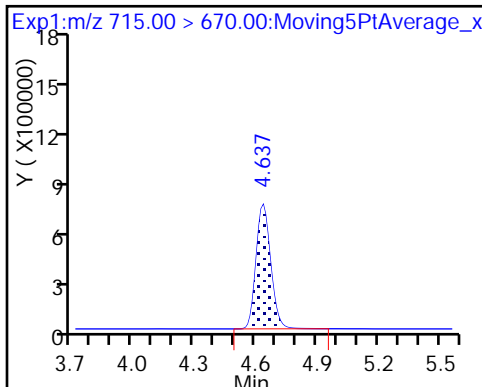
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

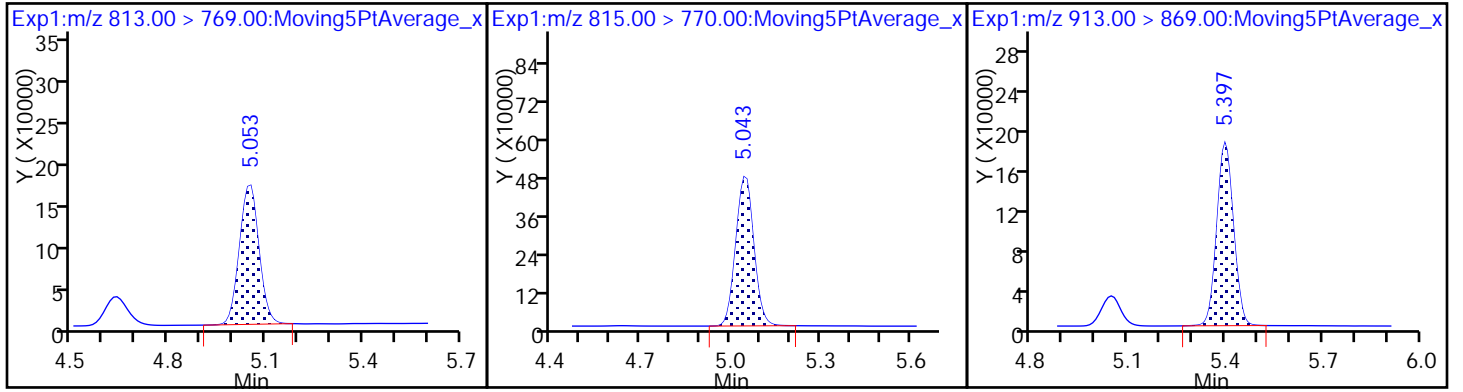
42 Perfluorotetradecanoic acid



45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/12 Calibration Date: 07/23/2017 15:48
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9029 | | 51.2 | 50.0 | 2.4 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.006 | | 48.3 | 50.0 | -3.5 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.478 | | 43.9 | 44.2 | -0.7 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9398 | | 49.4 | 50.0 | -1.3 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9913 | | 48.3 | 50.0 | -3.4 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.034 | | 43.5 | 45.5 | -4.4 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8465 | | 44.8 | 47.4 | -5.5 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 0.9815 | | 46.0 | 50.0 | -8.0 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.119 | | 47.5 | 47.6 | -0.2 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 1.012 | | 49.7 | 50.0 | -0.6 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.023 | | 44.9 | 46.4 | -3.2 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.8344 | | 43.9 | 47.9 | -8.4 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9414 | | 48.0 | 50.0 | -3.9 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9253 | | 51.3 | 50.0 | 2.6 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.8838 | | 48.6 | 50.0 | -2.9 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.5885 | | 45.6 | 48.2 | -5.5 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8455 | | 49.8 | 50.0 | -0.4 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 0.9582 | | 46.6 | 50.0 | -6.8 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8759 | | 47.7 | 50.0 | -4.6 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.8987 | | 48.4 | 50.0 | -3.3 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9011 | | 48.6 | 50.0 | -2.8 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8566 | | 50.3 | 50.0 | 0.6 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.865 | | 48.5 | 50.0 | -3.0 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8124 | | 50.6 | 50.0 | 1.3 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8180 | | 53.5 | 50.0 | 6.9 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 168207 | | 53.9 | 50.0 | 7.8 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 115246 | | 52.1 | 50.0 | 4.3 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 101804 | | 50.3 | 50.0 | 0.6 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 86264 | | 51.5 | 50.0 | 2.9 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 140919 | | 48.5 | 47.3 | 2.5 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 48401 | | 48.3 | 47.5 | 1.8 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/12 Calibration Date: 07/23/2017 15:48
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|-------|--------|
| 13C4 PFOA | Ave | 82143 | 84609 | | 51.5 | 50.0 | 3.0 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 110381 | | 48.8 | 47.8 | 2.0 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 63063 | | 48.0 | 50.0 | -4.1 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 36015 | | 47.3 | 47.9 | -1.3 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 53544 | | 47.9 | 50.0 | -4.1 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 180199 | | 49.3 | 50.0 | -1.4 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 21364 | | 49.2 | 50.0 | -1.7 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 20780 | | 47.4 | 50.0 | -5.2 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 39142 | | 48.1 | 50.0 | -3.9 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 47791 | | 50.7 | 50.0 | 1.4 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 38225 | | 42.8 | 50.0 | -14.4 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 50866 | | 52.1 | 50.0 | 4.2 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 80494 | | 49.6 | 50.0 | -0.9 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 38552 | | 46.7 | 50.0 | -6.7 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_012.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 23-Jul-2017 15:48:51 ALS Bottle#: 32 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 13:03:07 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 12:55:13

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.556 | 1.556 | 0.0 | 1.000 | 7593280 | 51.2 | 102 | 3928 | |
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.556 | 1.556 | 0.0 | | 8410354 | 53.9 | 108 | 38850 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.775 | 1.775 | 0.0 | 1.000 | 5797619 | 48.3 | 96.5 | 3967 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.775 | 1.775 | 0.0 | | 5762322 | 52.1 | 104 | 68577 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.793 | 1.793 | 0.0 | | 137350 | NC | | 5300 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.802 | 1.802 | 0.0 | 1.000 | 9207936 | 43.9 | 99.3 | 5523 | |
| | 298.90 > 99.00 | 1.802 | 1.802 | 0.0 | 1.000 | 3940927 | 2.34(0.00-0.00) | | 5383 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.020 | 2.020 | 0.0 | 1.000 | 2217446 | 47.2 | 101 | 88996 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.055 | 2.055 | 0.0 | 1.000 | 4783774 | 49.4 | 98.7 | 13587 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.055 | 2.055 | 0.0 | | 5090224 | 50.3 | 101 | 44386 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.403 | 2.403 | 0.0 | 1.000 | 4275481 | 48.3 | 96.6 | 9446 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.403 | 2.403 | 0.0 | | 4313220 | 51.5 | 103 | 27309 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.419 | 2.419 | 0.0 | 1.000 | 6628532 | 43.5 | 95.6 | 4683 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.419 | 2.419 | 0.0 | | 6665492 | 48.5 | 103 | 31559 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|--------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.742 | 2.742 | 0.0 | 1.000 | 1942018 | 44.8 | 94.5 | 40083 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.742 | 2.742 | 0.0 | | 2299045 | 48.3 | 102 | 32646 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.764 | 2.764 | 0.0 | | 3940812 | 50.0 | 100 | 30481 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.771 | 2.771 | 0.0 | 1.000 | 4152199 | 46.0 | 92.0 | 895 |
| | 413.00 | > 169.00 | 2.771 | 2.771 | 0.0 | 1.000 | 2663426 | | 1.56(0.90-1.10) | 9595 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.771 | 2.771 | 0.0 | | 4230429 | 51.5 | 103 | 33757 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.778 | 2.778 | 0.0 | 1.000 | 5881872 | 47.5 | 99.8 | 28223 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.151 | 3.151 | 0.0 | 1.000 | 5241863 | 44.9 | 96.8 | 154236 |
| | 499.00 | > 99.00 | 3.151 | 3.151 | 0.0 | 1.000 | 1067312 | | 4.91(0.90-1.10) | 8224 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.151 | 3.151 | 0.0 | 1.000 | 3191302 | 49.7 | 99.4 | 5936 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.151 | 3.151 | 0.0 | | 5276220 | 48.8 | 102 | 16568 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.151 | 3.151 | 0.0 | | 3153174 | 48.0 | 95.9 | 15026 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.497 | 3.497 | 0.0 | 1.000 | 1439453 | 43.9 | 91.6 | 14524 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.497 | 3.497 | 0.0 | | 1725140 | 47.3 | 98.7 | 14628 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.507 | 3.507 | 0.0 | | 9009954 | 49.3 | 98.6 | 13244 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.507 | 3.507 | 0.0 | 1.000 | 8336869 | 51.3 | 103 | 10729 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.507 | 3.507 | 0.0 | | 2677197 | 47.9 | 95.9 | 8371 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.507 | 3.507 | 0.0 | 1.000 | 2520364 | 48.0 | 96.1 | 8151 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.658 | 3.658 | 0.0 | | 1068222 | 49.2 | 98.3 | 7360 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.669 | 3.669 | 0.0 | 1.003 | 944053 | 48.6 | 97.1 | 10289 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.815 | 3.815 | 0.0 | 1.000 | 3130876 | 45.6 | 94.5 | 9043 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.824 | 3.824 | 0.0 | | 1038989 | 47.4 | 94.8 | 2950 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.833 | 3.833 | 0.0 | 1.000 | 1875333 | 46.6 | 93.2 | 3524 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.833 | 3.833 | 0.0 | 1.002 | 878491 | 49.8 | 99.6 | 7916 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.833 | 3.833 | 0.0 | | 1957080 | 48.1 | 96.1 | 8387 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.993 | 3.993 | 0.0 | 2389531 | 50.7 | 101 | 862 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.993 | 3.993 | 0.0 | 1.000 | 2092950 | 47.7 | 95.4 | 7483 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.123 | 4.123 | 0.0 | 1.000 | 1717653 | 48.4 | 96.7 | 1259 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.123 | 4.123 | 0.0 | | 1911233 | 42.8 | 85.6 | 4783 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.174 | 4.174 | 0.0 | | 2543304 | 52.1 | 104 | 6780 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.183 | 4.183 | 0.0 | 1.000 | 2291760 | 48.6 | 97.2 | 7551 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.388 | 4.388 | 0.0 | 1.000 | 1637243 | 50.3 | 101 | 636 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.619 | 4.619 | 0.0 | | 4024675 | 49.6 | 99.1 | 19711 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.630 | 4.630 | 0.0 | 1.000 | 3564906 | 48.5 | 97.0 | 251 |
| | 713.00 | > 169.00 | 4.619 | 4.630 | -0.012 | 0.998 | 520427 | 6.85(0.00-0.00) | | 6036 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.030 | 5.030 | 0.0 | 1.000 | 1552604 | 50.6 | 101 | 282 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.030 | 5.030 | 0.0 | | 1927621 | 46.7 | 93.3 | 4567 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.381 | 5.381 | 0.0 | 1.000 | 1563429 | 53.5 | 107 | 676 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00008

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_012.d

Injection Date: 23-Jul-2017 15:48:51

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

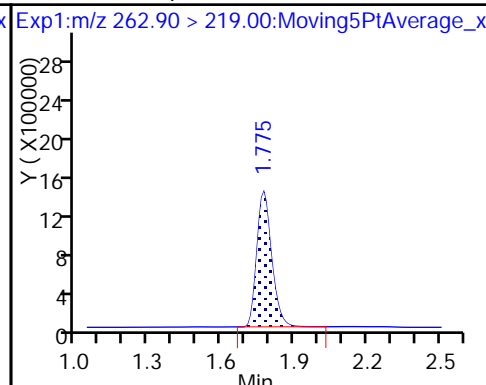
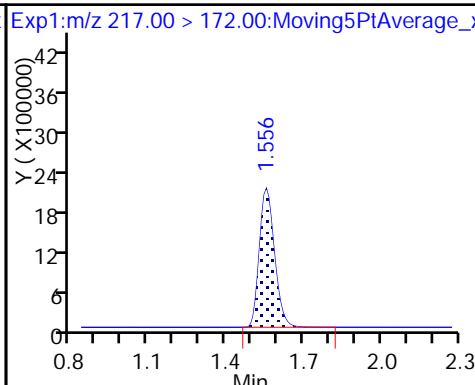
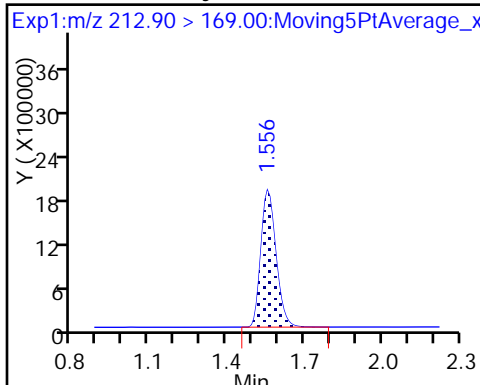
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

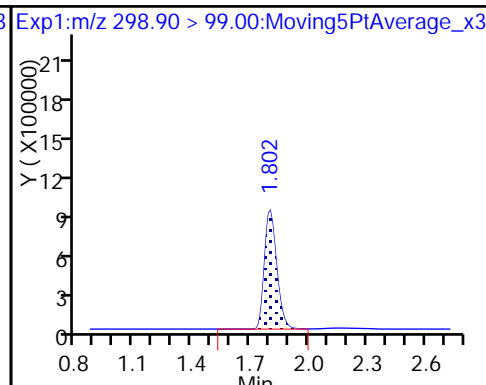
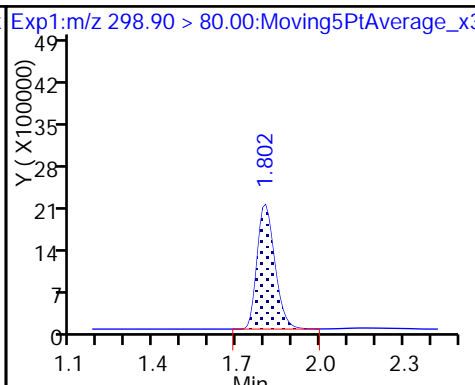
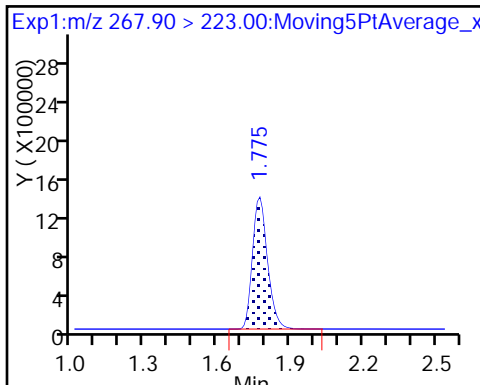
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

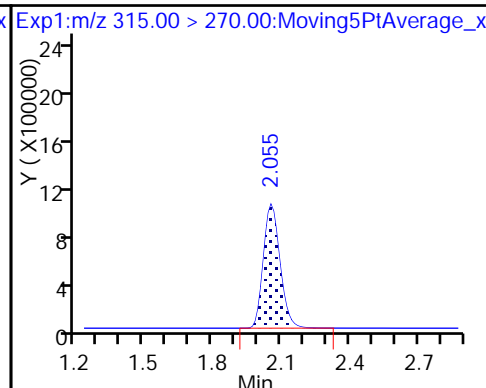
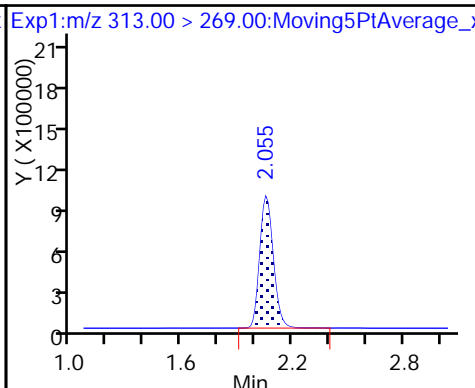
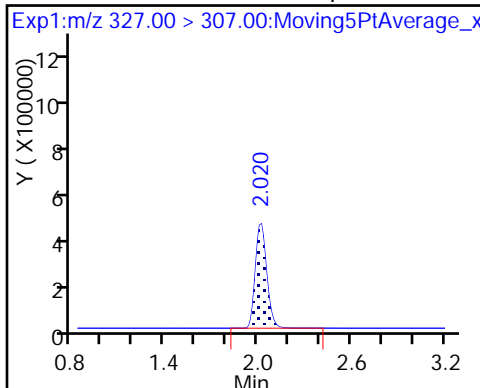
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

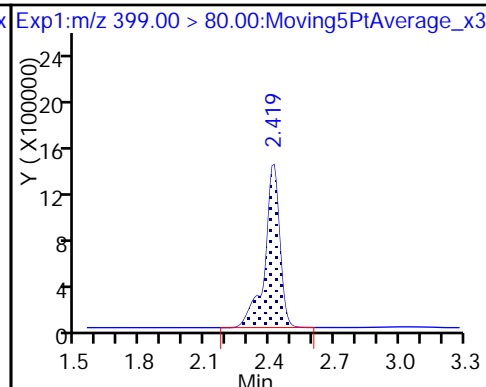
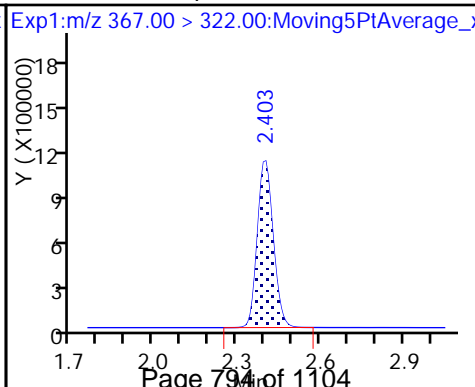
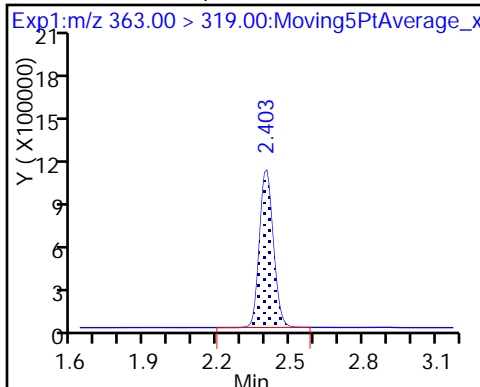
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

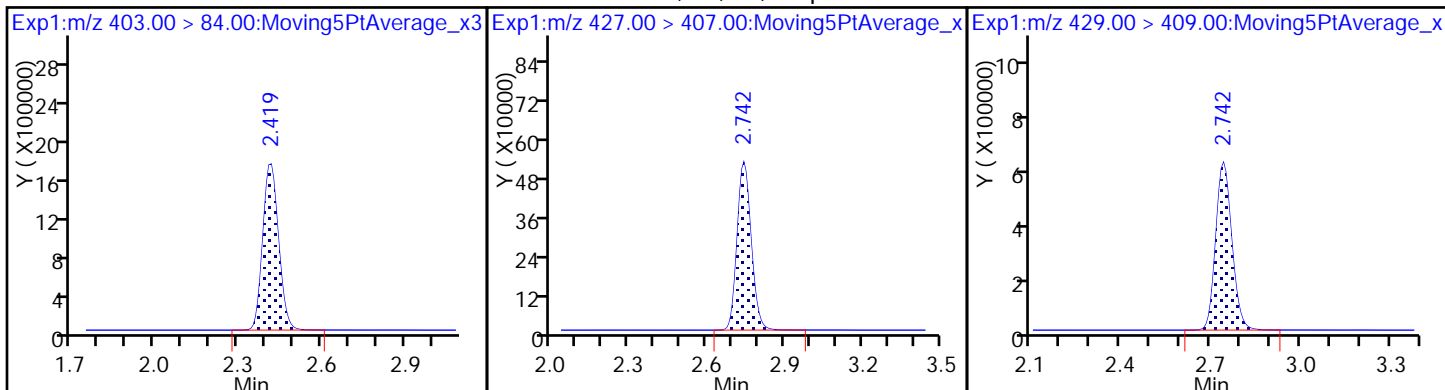
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

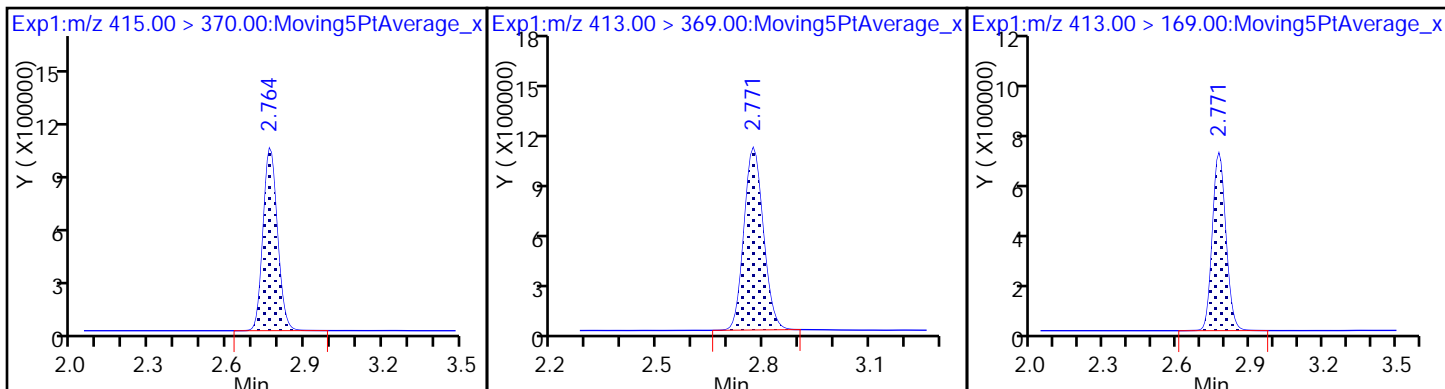
D 12 M2-6:2FTS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

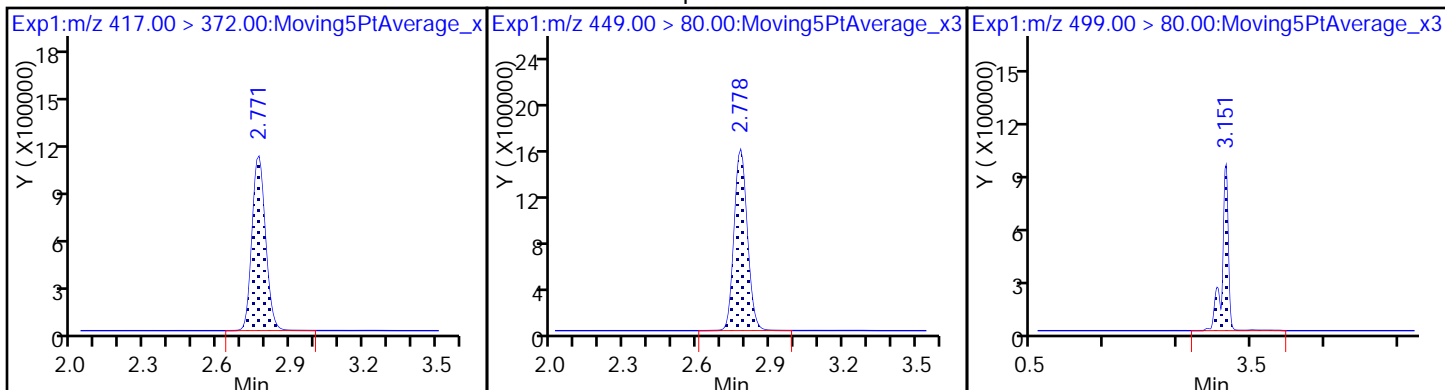
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

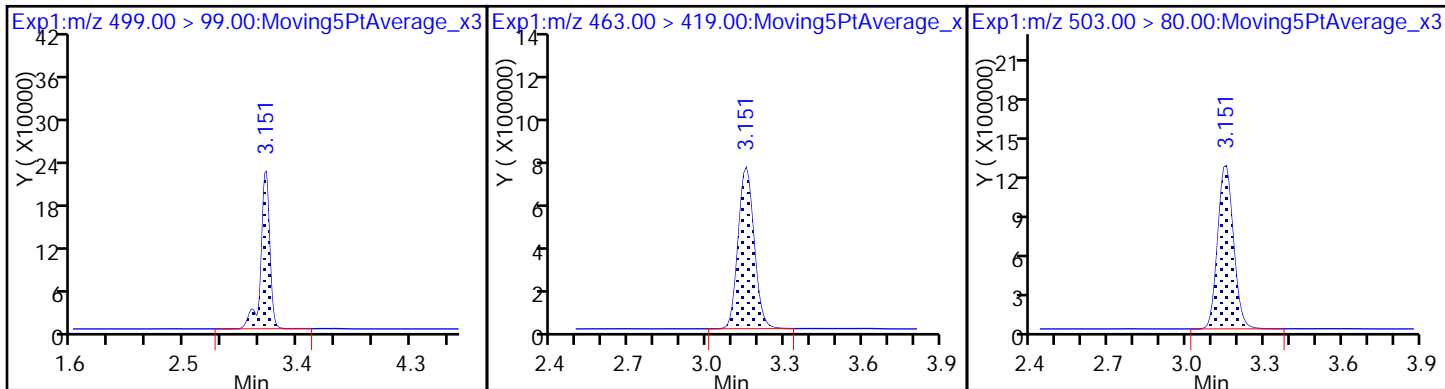
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

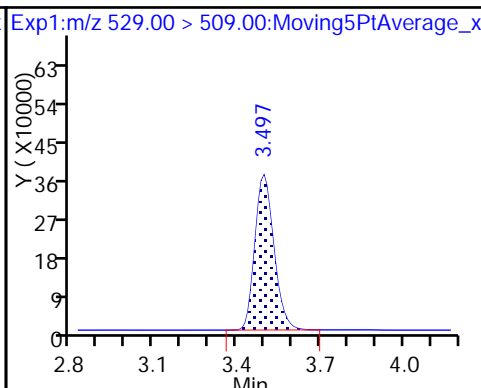
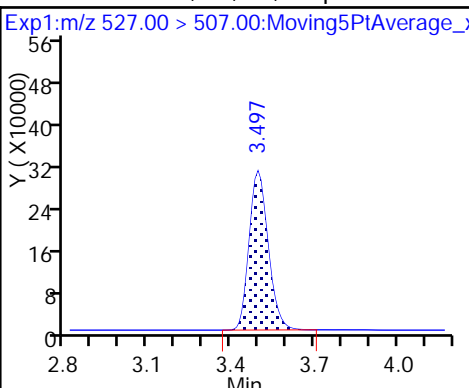
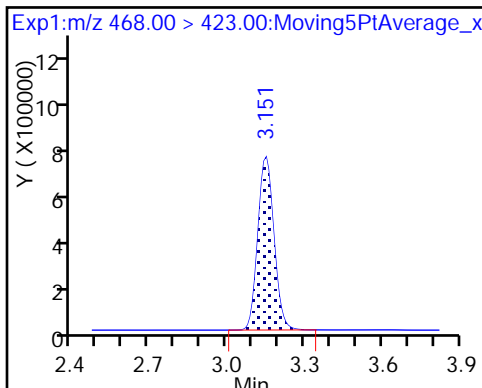
D 18 13C4 PFOS



D 19 13C5 PFNA

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

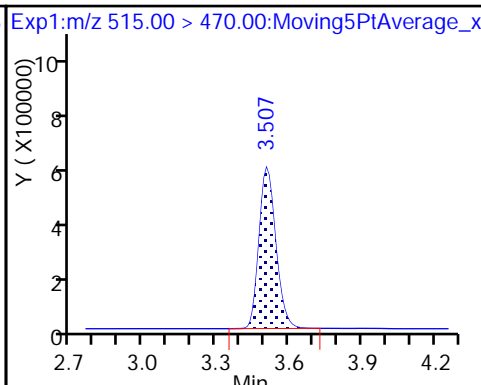
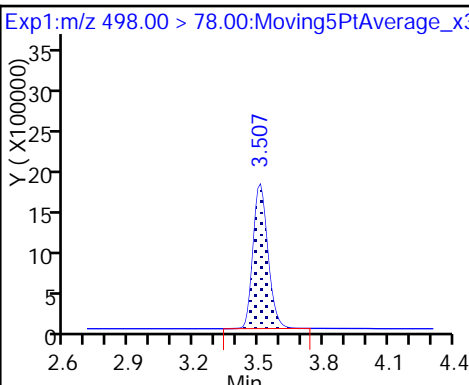
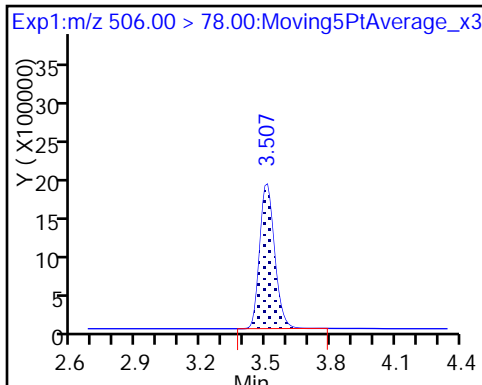
De26 M2-8:2FTS



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

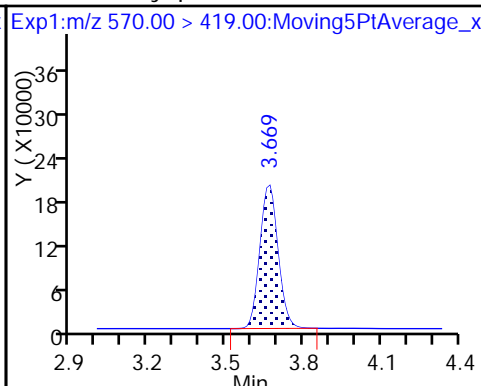
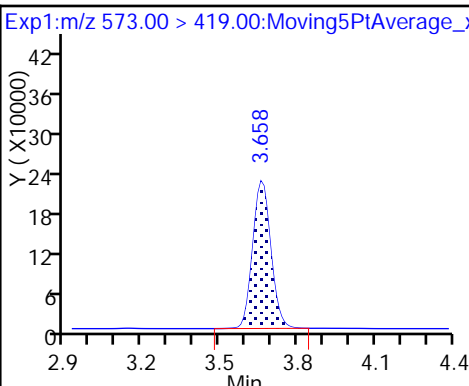
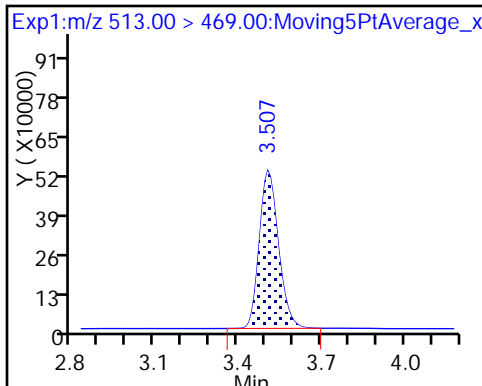
D 23 13C2 PFDA



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

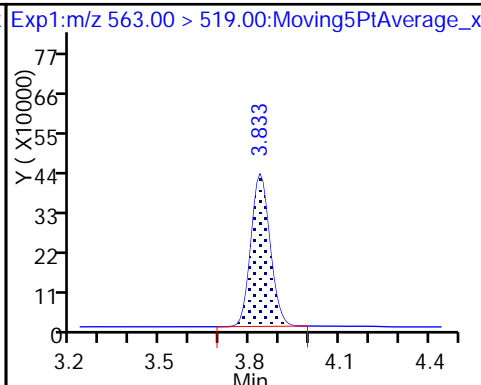
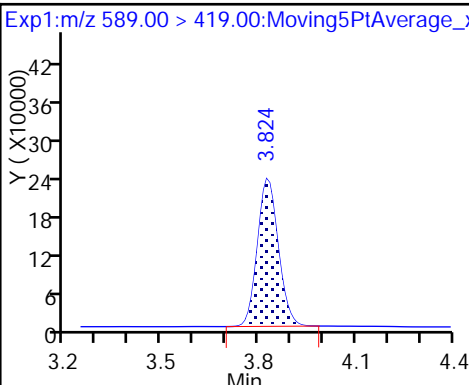
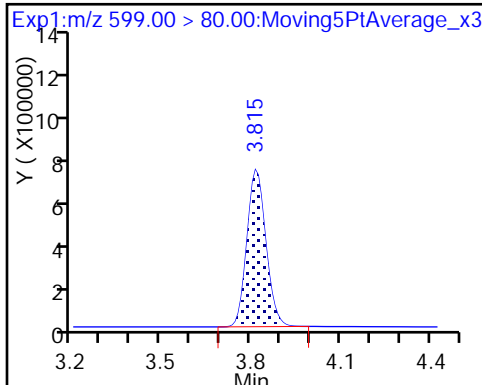
28 N-methyl perfluorooctane sulfonamide



29 Perfluorodecane Sulfonic acid

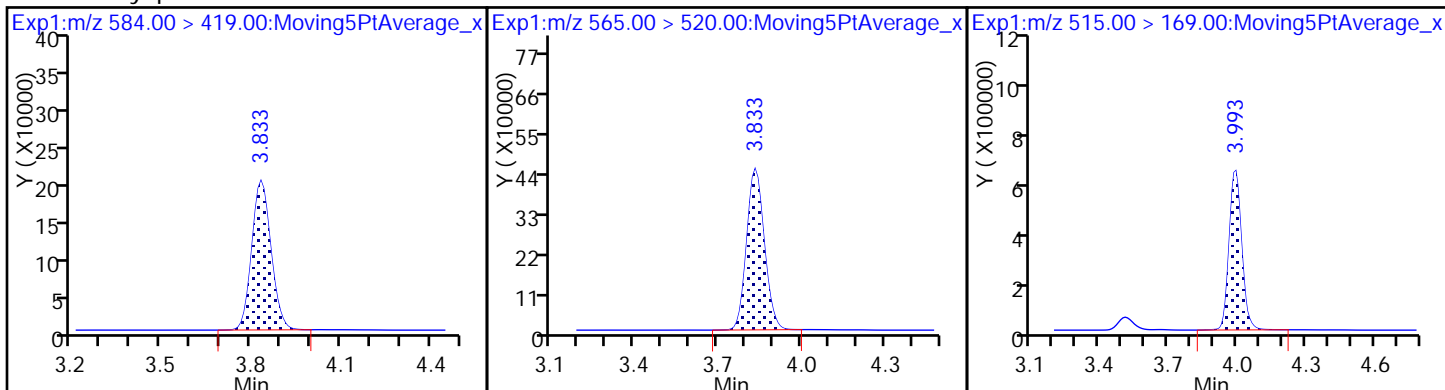
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUa

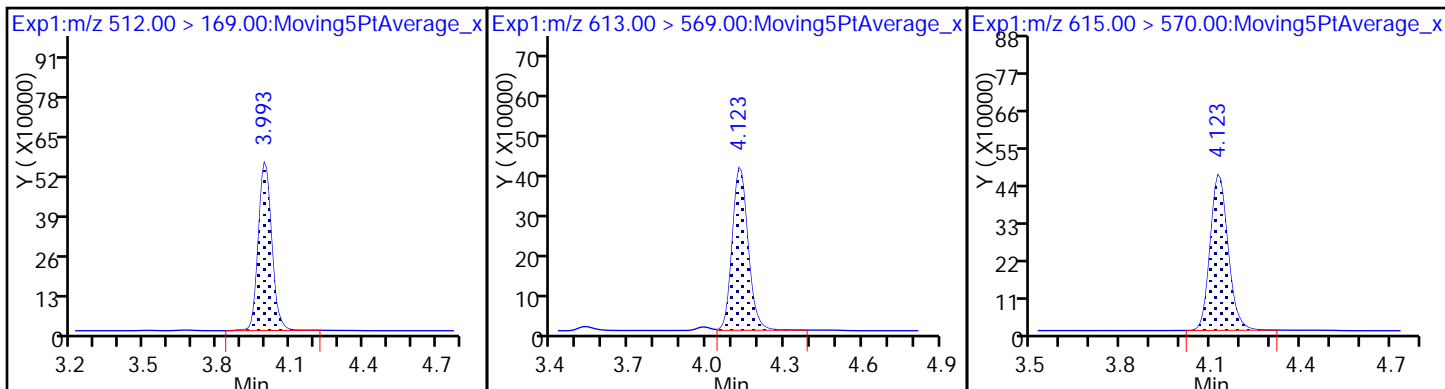
D 34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

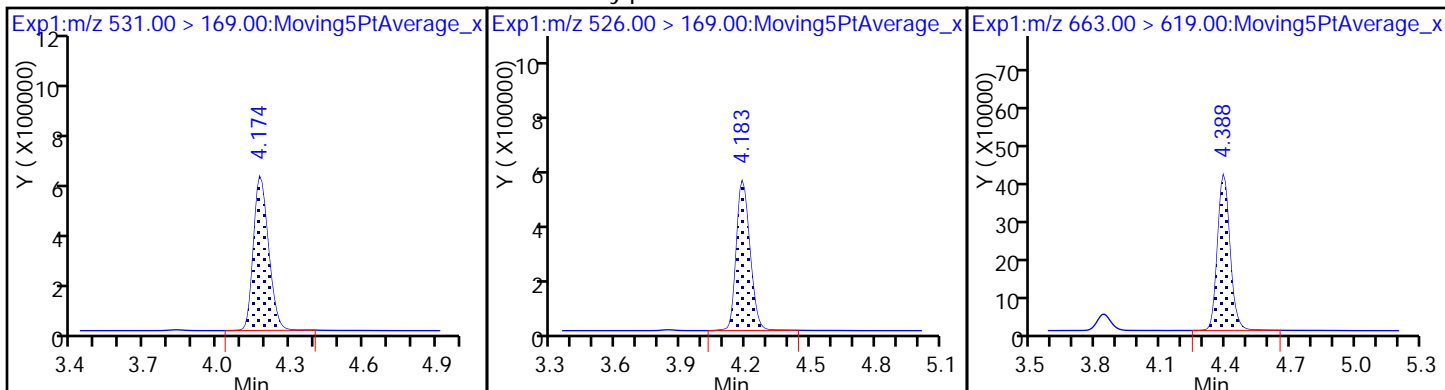
D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

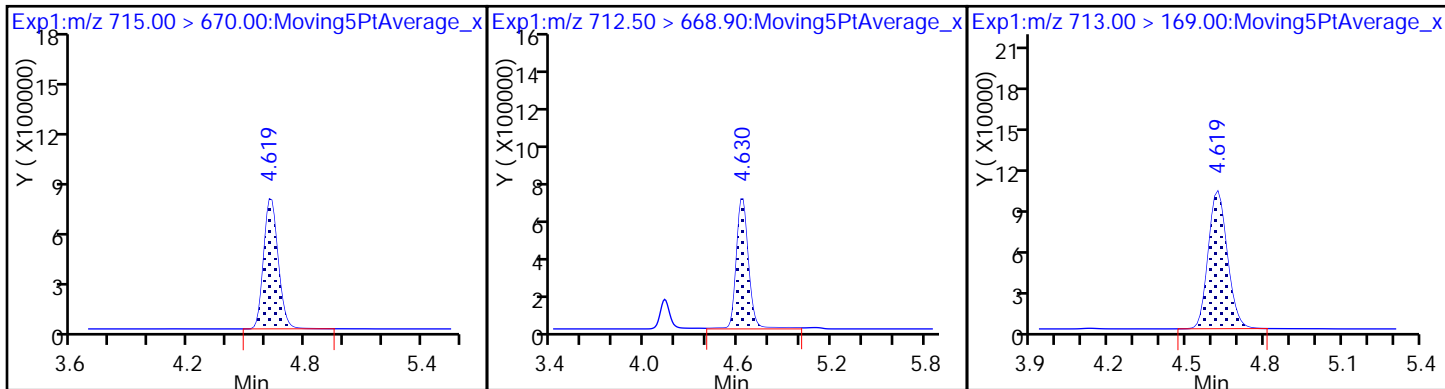
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid



45 Perfluorohexadecanoic acid

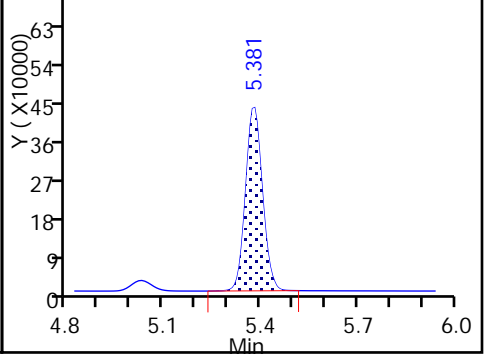
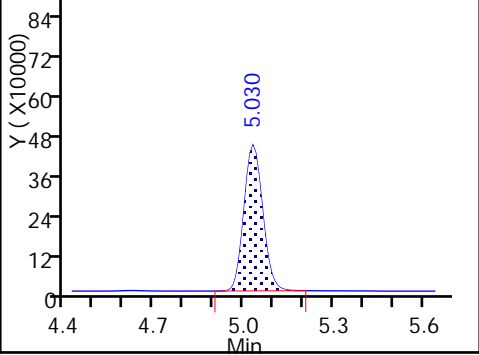
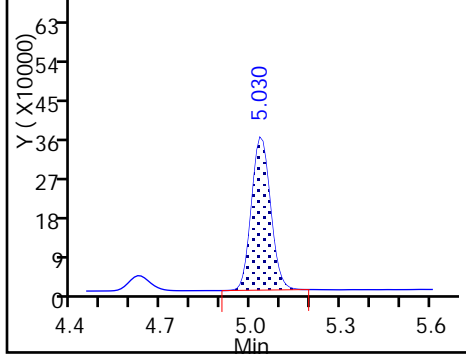
D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid

Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x

Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/21 Calibration Date: 07/23/2017 16:50
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_021.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9379 | | 21.3 | 20.0 | 6.3 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.031 | | 19.8 | 20.0 | -1.1 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.503 | | 17.8 | 17.7 | 0.9 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9232 | | 19.4 | 20.0 | -3.0 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9873 | | 19.2 | 20.0 | -3.8 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.013 | | 17.0 | 18.2 | -6.4 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8597 | | 18.2 | 19.0 | -4.0 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.043 | | 19.6 | 20.0 | -2.2 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.243 | | 21.1 | 19.0 | 10.8 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 1.020 | | 20.0 | 20.0 | 0.2 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.048 | | 18.4 | 18.6 | -0.9 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9236 | | 19.4 | 19.2 | 1.4 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9608 | | 19.6 | 20.0 | -2.0 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9238 | | 20.5 | 20.0 | 2.4 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9171 | | 20.2 | 20.0 | 0.8 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6369 | | 19.7 | 19.3 | 2.3 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8432 | | 19.9 | 20.0 | -0.7 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.050 | | 20.4 | 20.0 | 1.9 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8819 | | 19.2 | 20.0 | -4.0 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.8799 | | 18.9 | 20.0 | -5.3 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.8905 | | 19.2 | 20.0 | -4.0 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.9621 | | 22.6 | 20.0 | 13.0 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.128 | | 22.1 | 20.0 | 10.7 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8696 | | 21.3 | 20.0 | 6.5 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8649 | | 22.6 | 20.0 | 13.0 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 173888 | | 55.7 | 50.0 | 11.4 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 117948 | | 53.4 | 50.0 | 6.7 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 103863 | | 51.3 | 50.0 | 2.7 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 89637 | | 53.5 | 50.0 | 6.9 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 145465 | | 50.1 | 47.3 | 5.8 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 49323 | | 49.3 | 47.5 | 3.7 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/21 Calibration Date: 07/23/2017 16:50
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_021.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|-------|--------|
| 13C4 PFOA | Ave | 82143 | 84145 | | 51.2 | 50.0 | 2.4 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 104664 | | 46.2 | 47.8 | -3.3 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 62537 | | 47.6 | 50.0 | -4.9 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 34924 | | 45.8 | 47.9 | -4.3 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 54622 | | 48.9 | 50.0 | -2.2 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 181189 | | 49.6 | 50.0 | -0.9 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 20224 | | 46.5 | 50.0 | -6.9 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 21268 | | 48.5 | 50.0 | -3.0 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 36927 | | 45.3 | 50.0 | -9.3 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 46769 | | 49.6 | 50.0 | -0.7 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 37023 | | 41.5 | 50.0 | -17.1 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 48239 | | 49.4 | 50.0 | -1.2 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 71157 | | 43.8 | 50.0 | -12.4 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 35798 | | 43.3 | 50.0 | -13.3 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_021.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 23-Jul-2017 16:50:57 ALS Bottle#: 31 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 12:07:06 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK004

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.556 | 1.556 | 0.0 | 1.000 | 3261642 | 21.3 | 106 | 1397 | |
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.556 | 1.556 | 0.0 | | 8694401 | 55.7 | 111 | 40024 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.766 | 1.775 | -0.009 | 1.000 | 2432151 | 19.8 | 98.9 | 1512 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.766 | 1.775 | -0.009 | | 5897420 | 53.4 | 107 | 67163 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.793 | 1.793 | 0.0 | | 135943 | NC | | 6394 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.793 | 1.802 | -0.009 | 1.000 | 3864490 | 17.8 | 101 | 2416 | |
| | 298.90 > 99.00 | 1.793 | 1.802 | -0.009 | 1.000 | 1500909 | 2.57(0.00-0.00) | | 2163 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.009 | 2.020 | -0.011 | 1.000 | 863323 | 18.0 | 96.5 | 43460 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.043 | 2.055 | -0.012 | 1.000 | 1917750 | 19.4 | 97.0 | 4979 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.043 | 2.055 | -0.012 | | 5193149 | 51.3 | 103 | 39719 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.392 | 2.403 | -0.011 | 1.000 | 1769999 | 19.2 | 96.2 | 6051 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.392 | 2.403 | -0.011 | | 4481872 | 53.5 | 107 | 31630 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.408 | 2.419 | -0.011 | 1.000 | 2681184 | 17.0 | 93.6 | 2224 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.408 | 2.419 | -0.011 | | 6880509 | 50.1 | 106 | 36516 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.733 | 2.742 | -0.009 | 1.000 | 803920 | 18.2 | 96.0 | 19454 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.726 | 2.742 | -0.016 | 2342838 | 49.3 | 104 | 31347 | |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.755 | 2.764 | -0.009 | 4125547 | 50.0 | 100 | 29726 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.755 | 2.771 | -0.016 | 1754949 | 19.6 | 97.8 | 371 | |
| | 413.00 | > 169.00 | 2.755 | 2.771 | -0.016 | 1131978 | 1.55(0.90-1.10) | | 6659 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.755 | 2.771 | -0.016 | 4207257 | 51.2 | 102 | 25340 | |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.762 | 2.778 | -0.016 | 2477495 | 21.1 | 111 | 25965 | |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.140 | 3.151 | -0.011 | 2035437 | 18.4 | 99.1 | 50727 | |
| | 499.00 | > 99.00 | 3.140 | 3.151 | -0.011 | 430392 | 4.73(0.90-1.10) | | 3680 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.140 | 3.151 | -0.011 | 1275362 | 20.0 | 100 | 4034 | |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.140 | 3.151 | -0.011 | 5002944 | 46.2 | 96.7 | 16049 | |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.140 | 3.151 | -0.011 | 3126860 | 47.6 | 95.1 | 14023 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.491 | 3.497 | -0.006 | 618053 | 19.4 | 101 | 12619 | |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.491 | 3.497 | -0.006 | 1672869 | 45.8 | 95.7 | 15038 | |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.500 | 3.507 | -0.007 | 9059472 | 49.6 | 99.1 | 10802 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.500 | 3.507 | -0.007 | 3347511 | 20.5 | 102 | 11612 | |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.500 | 3.507 | -0.007 | 2731086 | 48.9 | 97.8 | 7759 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.500 | 3.507 | -0.007 | 1049593 | 19.6 | 98.0 | 4072 | |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.654 | 3.658 | -0.004 | 1011201 | 46.5 | 93.1 | 7892 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.654 | 3.669 | -0.015 | 370934 | 20.2 | 101 | 7041 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.809 | 3.815 | -0.006 | 1285162 | 19.7 | 102 | 10712 | |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.818 | 3.824 | -0.006 | 1063396 | 48.5 | 97.0 | 3062 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.827 | 3.833 | -0.006 | 775811 | 20.4 | 102 | 2120 | |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.827 | 3.833 | -0.006 | 358640 | 19.9 | 99.3 | 5202 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.827 | 3.833 | -0.006 | 1846344 | 45.3 | 90.7 | 10691 | |
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.992 | 3.993 | -0.001 | 2338465 | 49.6 | 99.3 | 843 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| 35 MeFOSA | 512.00 > 169.00 | 3.992 | 3.993 | -0.001 | 1.000 | 824938 | 19.2 | 96.0 | 5049 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.122 | 4.123 | -0.001 | 1.000 | 651562 | 18.9 | 94.7 | 560 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.122 | 4.123 | -0.001 | | 1851150 | 41.5 | 82.9 | 4611 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.172 | 4.174 | -0.002 | | 2411928 | 49.4 | 98.8 | 6368 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.181 | 4.183 | -0.002 | 1.000 | 859108 | 19.2 | 96.0 | 5105 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.381 | 4.388 | -0.007 | 1.000 | 712381 | 22.6 | 113 | 222 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.616 | 4.619 | -0.002 | | 3557836 | 43.8 | 87.6 | 15926 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.616 | 4.630 | -0.014 | 1.000 | 1575992 | 22.1 | 111 | 117 | |
| | 713.00 > 169.00 | 4.616 | 4.630 | -0.014 | 1.000 | 202412 | | 7.79(0.00-0.00) | 2717 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.025 | 5.030 | -0.005 | 1.000 | 643909 | 21.3 | 107 | 125 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.025 | 5.030 | -0.005 | | 1789908 | 43.3 | 86.7 | 4632 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.368 | 5.381 | -0.013 | 1.000 | 640391 | 22.6 | 113 | 292 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULLL-L4_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_021.d

Injection Date: 23-Jul-2017 16:50:57

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

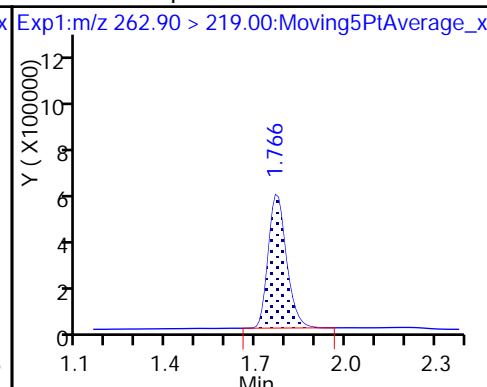
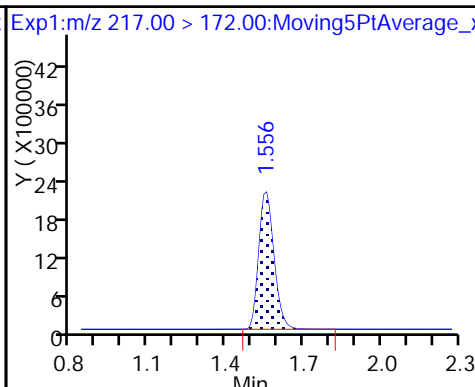
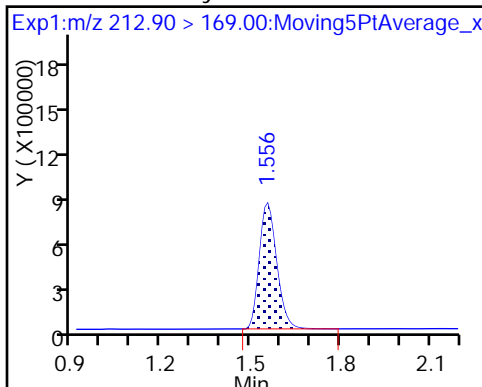
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

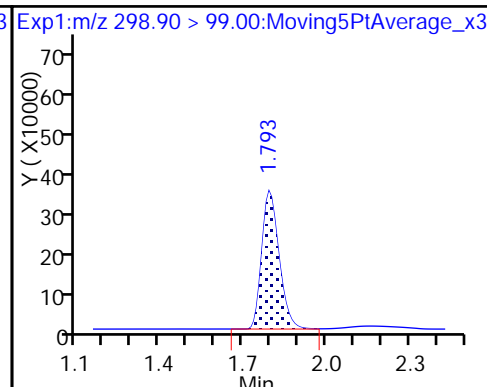
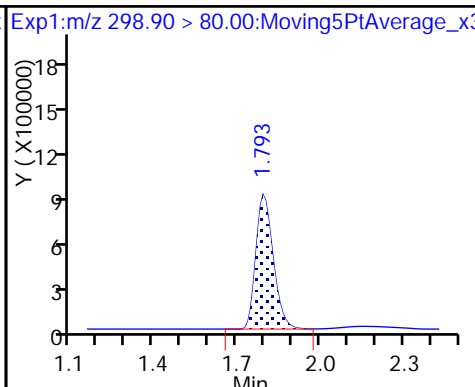
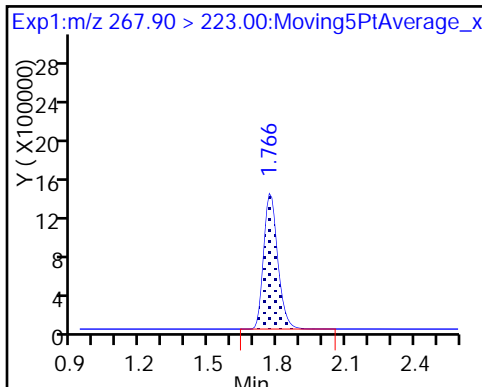
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

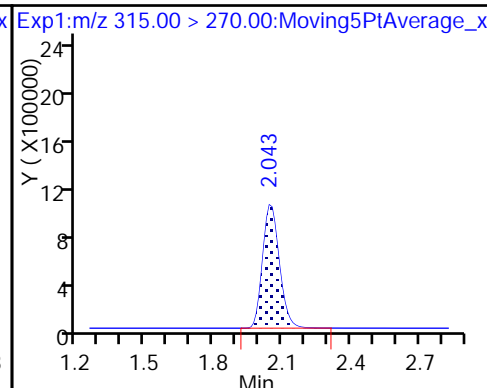
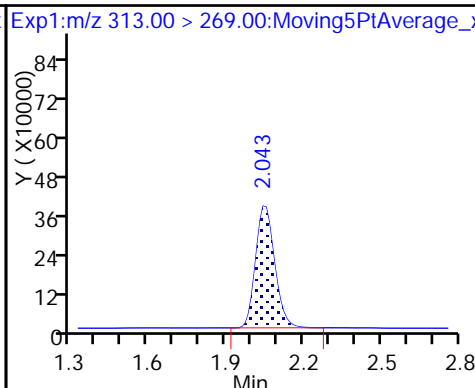
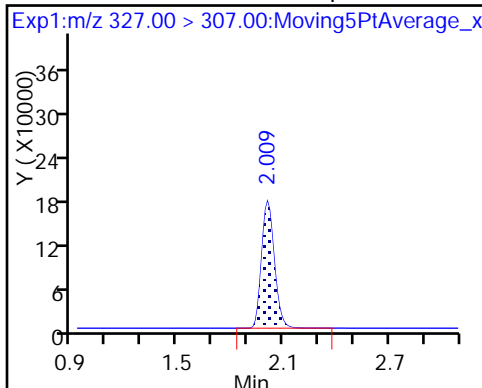
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

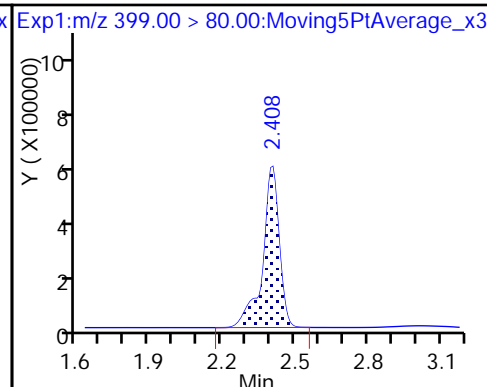
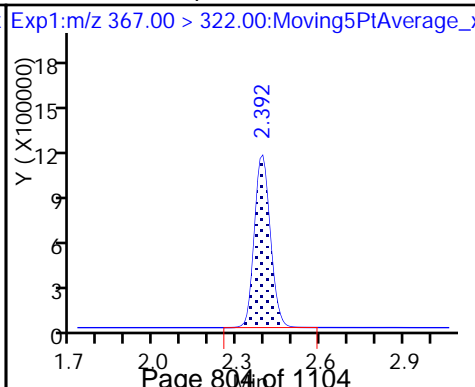
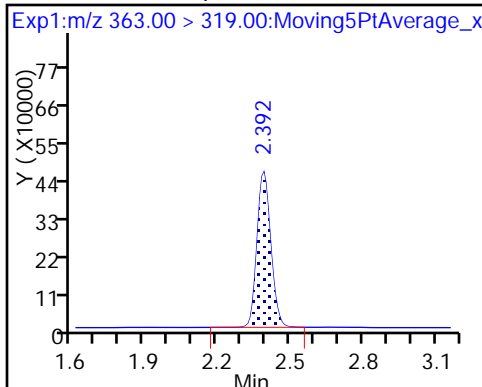
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

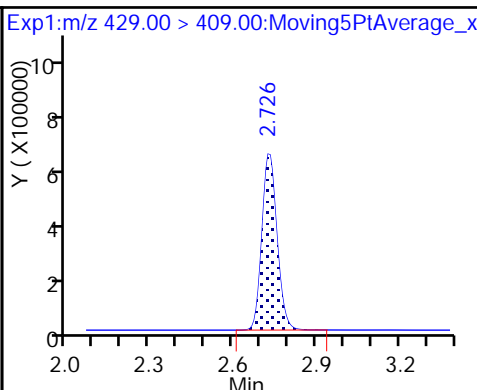
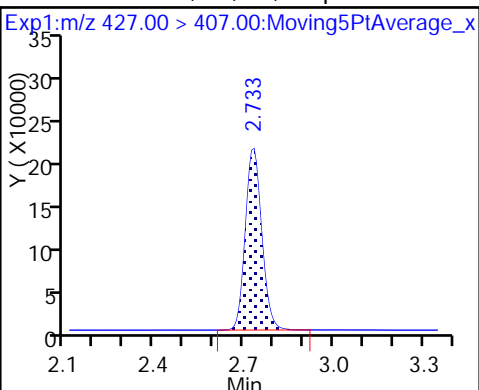
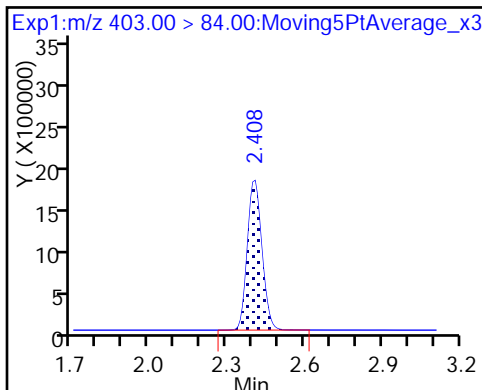
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

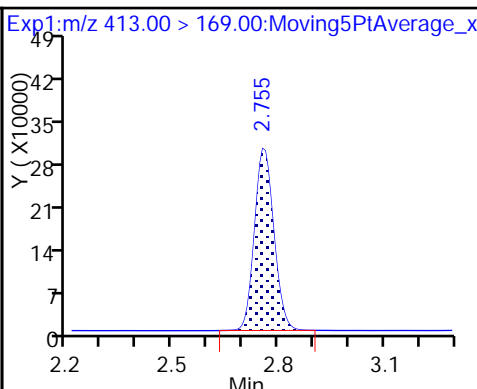
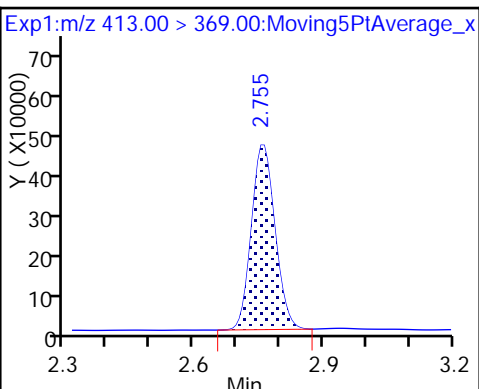
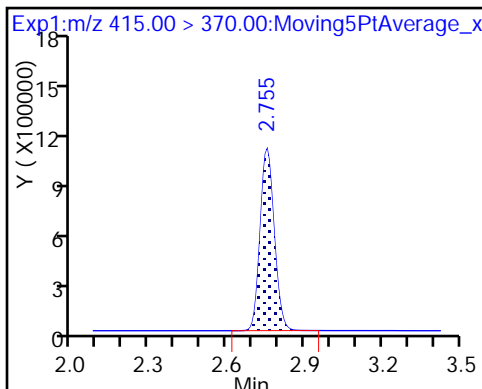
D 12 M2-6:2FTS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

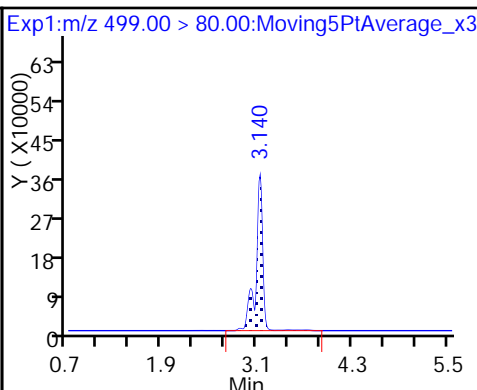
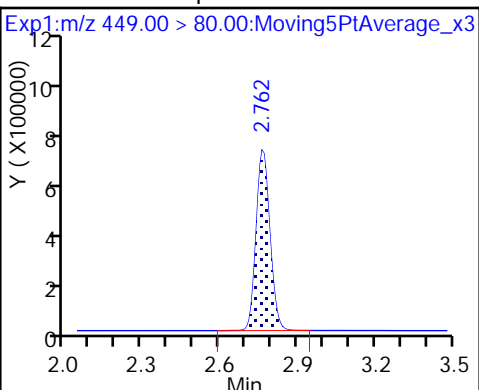
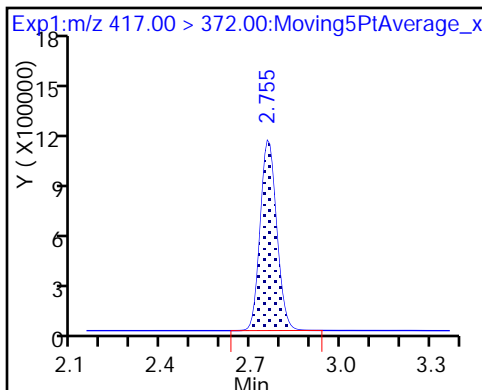
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

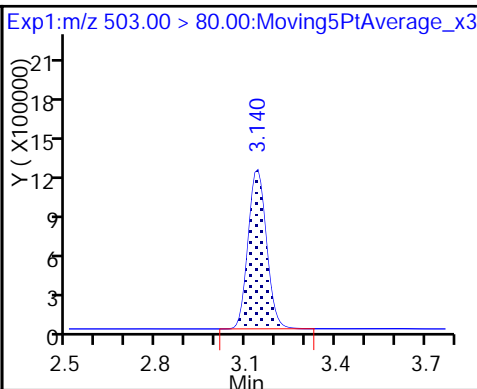
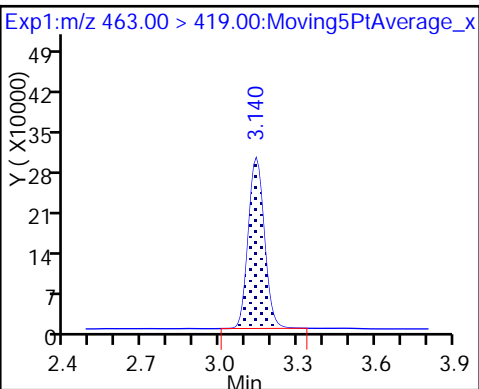
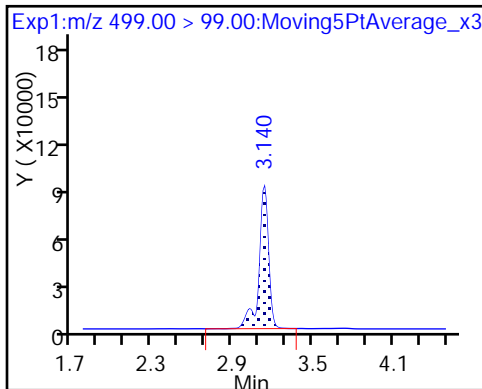
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

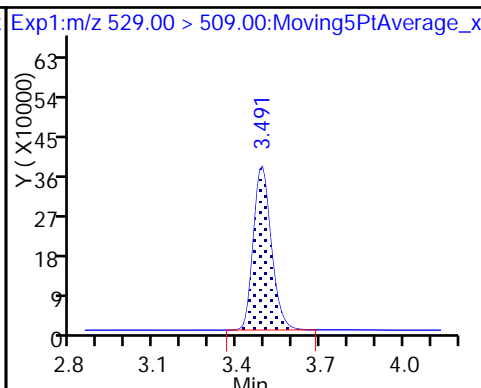
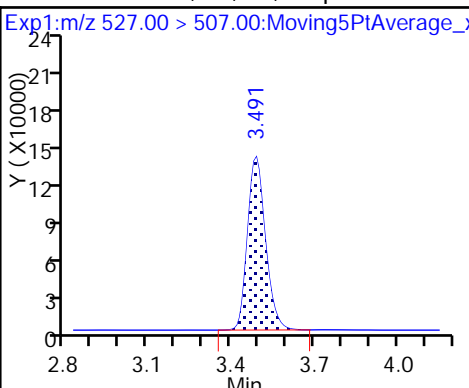
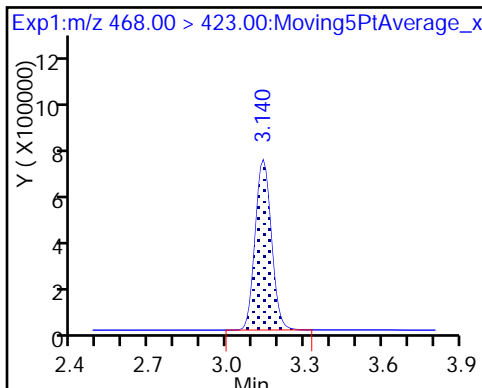
D 18 13C4 PFOS



D 19 13C5 PFNA

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

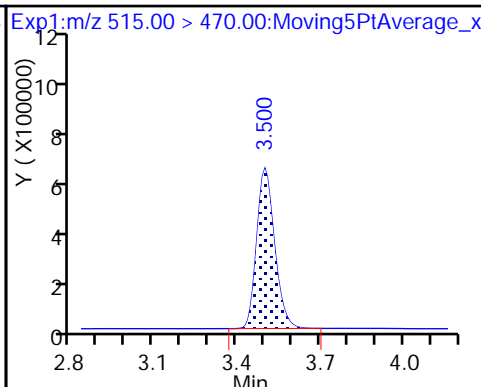
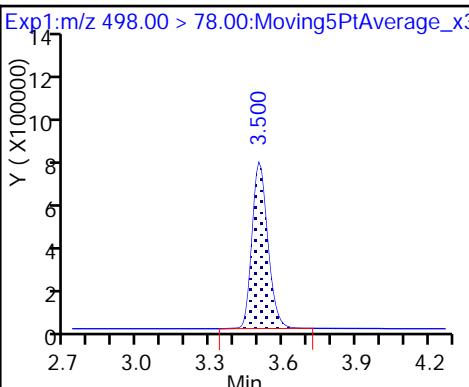
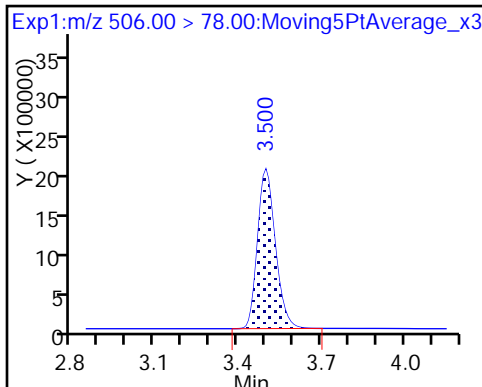
D26 M2-8:2FTS



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

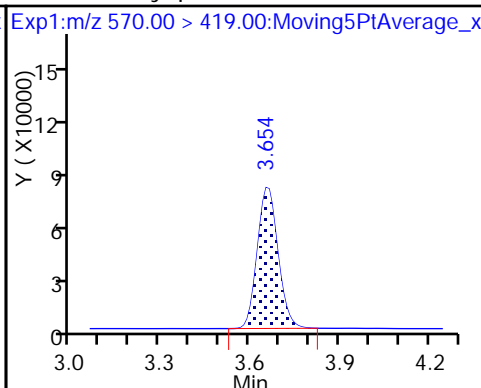
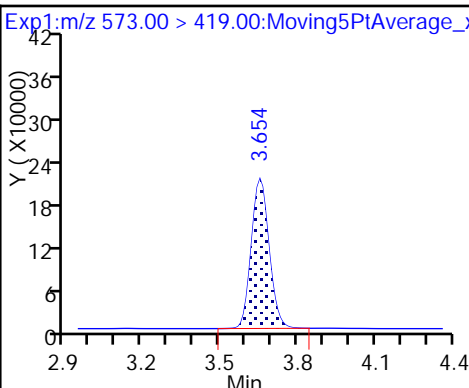
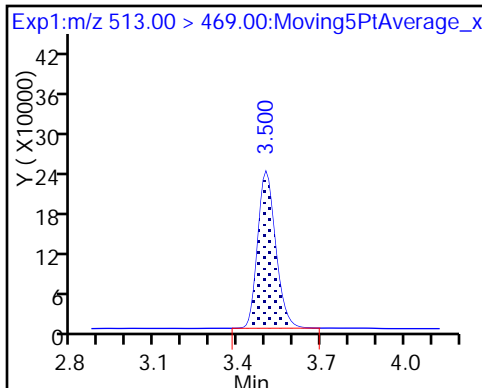
D 23 13C2 PFDA



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

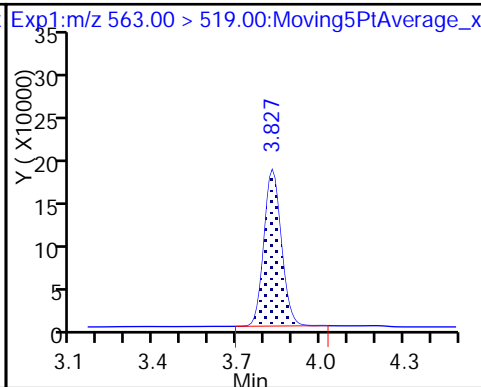
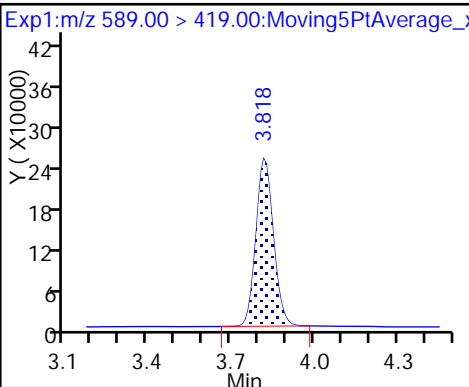
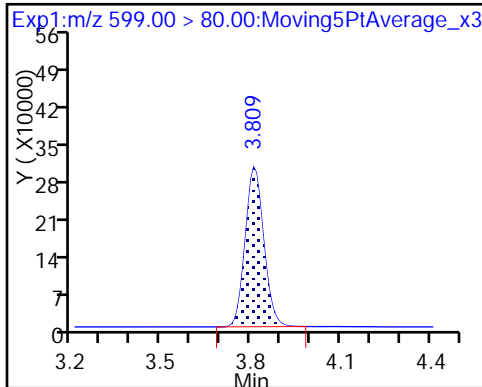
28 N-methyl perfluorooctane sulfonamide



29 Perfluorodecane Sulfonic acid

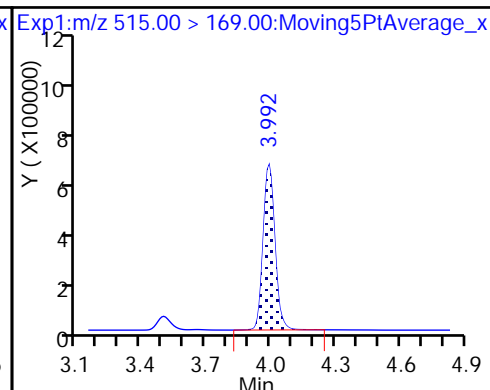
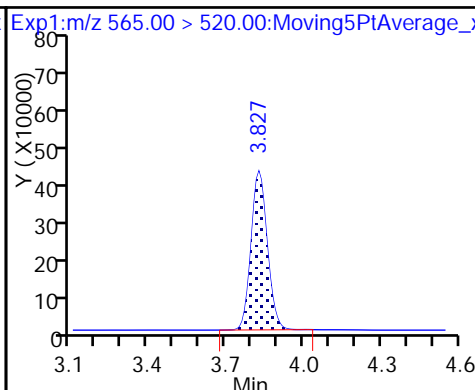
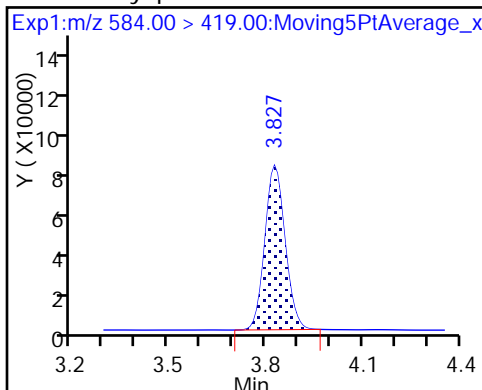
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUa

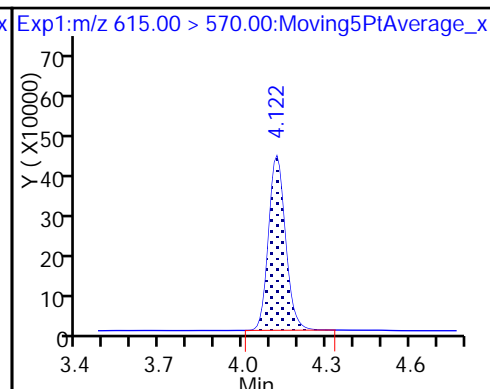
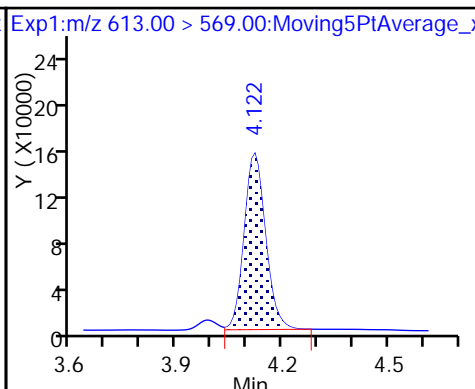
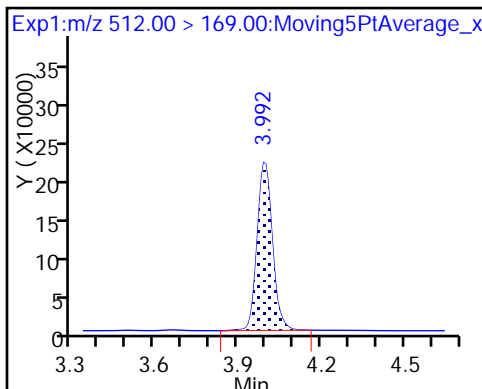
D 34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

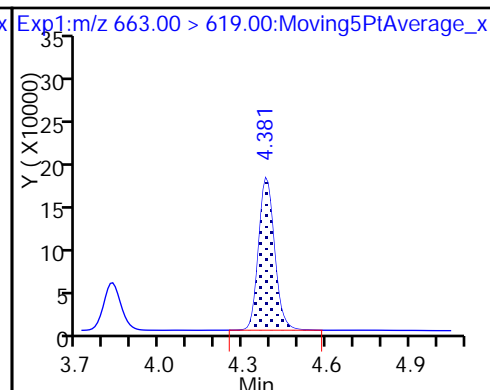
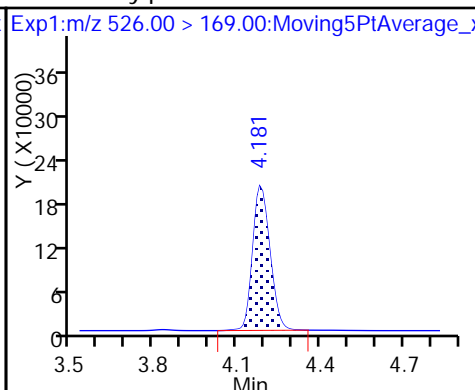
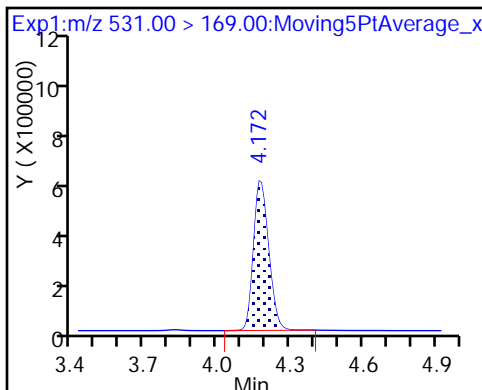
D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

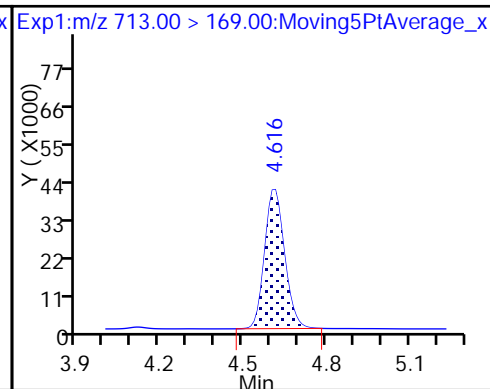
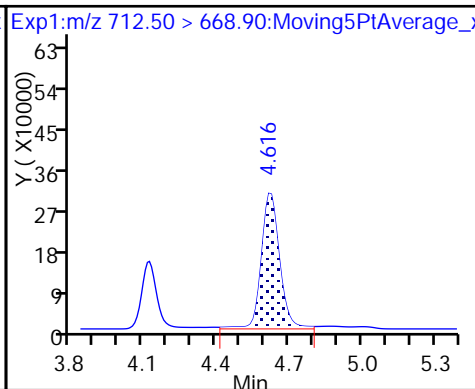
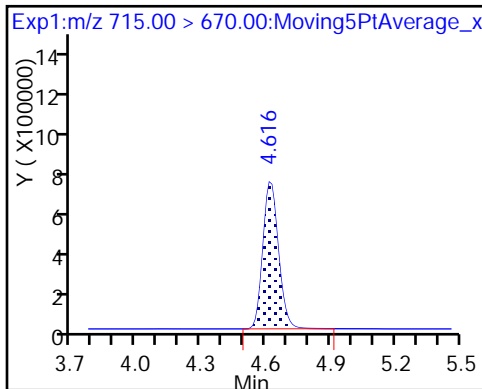
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

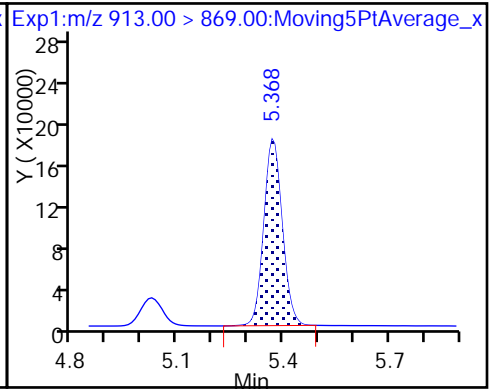
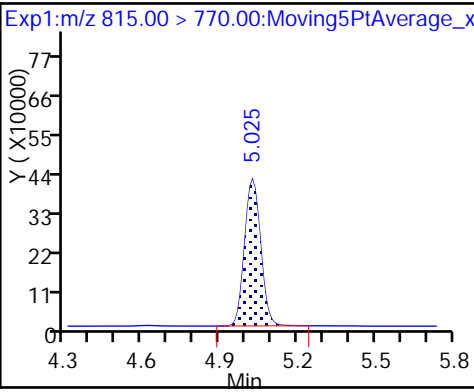
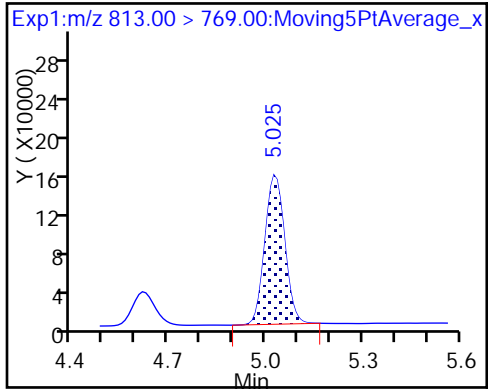
42 Perfluorotetradecanoic acid



45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175631/2 Calibration Date: 07/24/2017 11:42
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24A_004.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9430 | | 1.07 | 1.00 | 6.9 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.068 | | 1.02 | 1.00 | 2.5 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.485 | | 0.881 | 0.884 | -0.3 | 50.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9823 | | 1.03 | 1.00 | 3.2 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.035 | | 1.01 | 1.00 | 0.8 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.177 | | 0.990 | 0.910 | 8.8 | 50.0 |
| 6:2FTS | AveID | 0.8958 | 1.066 | | 1.13 | 0.948 | 19.0 | 50.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.050 | | 0.985 | 1.00 | -1.5 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.167 | | 0.991 | 0.952 | 4.1 | 50.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9560 | | 0.939 | 1.00 | -6.1 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.478 | | 1.30 | 0.928 | 39.8 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9118 | | 1.01 | 1.00 | 1.1 | 50.0 |
| 8:2FTS | AveID | 0.9107 | 0.9012 | | 0.948 | 0.958 | -1.0 | 50.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9261 | | 0.945 | 1.00 | -5.5 | 50.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.8950 | | 0.984 | 1.00 | -1.6 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6623 | | 1.03 | 0.964 | 6.4 | 50.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.7597 | | 0.895 | 1.00 | -10.5 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.159 | | 1.02 | 1.00 | 2.4 | 50.0 |
| MeFOSA | AveID | 0.9183 | 0.9275 | | 1.01 | 1.00 | 1.0 | 50.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9449 | | 1.02 | 1.00 | 1.9 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9052 | | 0.974 | 1.00 | -2.6 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.9070 | | 1.07 | 1.00 | 6.5 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.397 | | 1.25 | 1.00 | 24.7 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 1.714 | | 1.50 | 1.00 | 49.9 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8116 | | 1.06 | 1.00 | 6.1 | 50.0 |
| 13C4 PFBA | Ave | 156025 | 162534 | | 52.1 | 50.0 | 4.2 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 121488 | | 55.0 | 50.0 | 9.9 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 126892 | | 62.7 | 50.0 | 25.4 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 105586 | | 63.0 | 50.0 | 26.0 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 151531 | | 52.2 | 47.3 | 10.3 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 55947 | | 55.9 | 47.5 | 17.6 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175631/2 Calibration Date: 07/24/2017 11:42
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24A_004.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 102277 | | 62.3 | 50.0 | 24.5 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 114047 | | 50.4 | 47.8 | 5.4 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 81651 | | 62.1 | 50.0 | 24.2 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 190075 | | 52.0 | 50.0 | 4.0 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 50747 | | 66.6 | 47.9 | 39.0 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 79839 | | 71.5 | 50.0 | 43.0 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 26929 | | 62.0 | 50.0 | 23.9 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 28325 | | 64.6 | 50.0 | 29.2 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 59002 | | 72.4 | 50.0 | 44.9 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 47583 | | 50.5 | 50.0 | 1.0 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 47900 | | 49.0 | 50.0 | -1.9 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 55751 | | 62.4 | 50.0 | 24.8 | 50.0 |
| 13C2-PFtTeDA | Ave | 81216 | 108030 | | 66.5 | 50.0 | 33.0 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 56461 | | 68.3 | 50.0 | 36.7 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45798.b\2017.07.24A_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 24-Jul-2017 11:42:12 ALS Bottle#: 29 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45798.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 13:24:26 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 13:22:06

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.553 | 1.556 | -0.003 | 8126694 | 52.1 | | 104 | 37818 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.553 | 1.556 | -0.003 | 153263 | 1.07 | | 107 | 85.1 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.772 | 1.765 | 0.007 | 6074378 | 55.0 | | 110 | 75659 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.772 | 1.765 | 0.007 | 129748 | 1.02 | | 102 | 87.3 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.791 | 1.793 | -0.002 | 150497 | NC | | | 5898 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.800 | 1.793 | 0.007 | 198854 | 0.8813 | | 99.7 | 136 | |
| | 298.90 > 99.00 | 1.791 | 1.793 | -0.002 | 83393 | | 2.38(0.00-0.00) | | 195 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.017 | 2.009 | 0.008 | 49393 | 0.9089 | | 97.3 | 1983 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.051 | 2.043 | 0.008 | 6344598 | 62.7 | | 125 | 38515 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.051 | 2.043 | 0.008 | 124644 | 1.03 | | 103 | 512 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.395 | 2.385 | 0.010 | 5279316 | 63.0 | | 126 | 28917 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.395 | 2.385 | 0.010 | 109240 | 1.01 | | 101 | 524 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.411 | 2.401 | 0.010 | 7167410 | 52.2 | | 110 | 32029 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.411 | 2.401 | 0.010 | 162317 | 0.99 | | 109 | 302 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.737 | 2.732 | 0.005 | 2657504 | 55.9 | 118 | 26449 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.737 | 2.732 | 0.005 | 1.000 | 56550 | 1.13 | 119 | 3060 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.766 | 2.754 | 0.012 | 5113826 | 62.3 | 125 | 28318 | |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.759 | 2.754 | 0.005 | 5114344 | 50.0 | 100 | 32536 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.766 | 2.761 | 0.005 | 1.000 | 107413 | 0.9845 | 98.5 | 25.1 |
| | 413.00 | > 169.00 | 2.766 | 2.761 | 0.005 | 1.000 | 61233 | 1.75(0.90-1.10) | | 917 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.774 | 2.761 | 0.013 | 1.000 | 126720 | 0.99 | 104 | 4256 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.142 | 3.137 | 0.005 | 5451459 | 50.4 | 105 | 21741 | |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.150 | 3.137 | 0.013 | 4082544 | 62.1 | 124 | 24769 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.150 | 3.137 | 0.013 | 1.000 | 78060 | 0.9390 | 93.9 | 261 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.150 | 3.137 | 0.013 | 1.000 | 156402 | 1.30 | 140 | 4452 |
| | 499.00 | > 99.00 | 3.150 | 3.137 | 0.013 | 1.000 | 33614 | 4.65(0.90-1.10) | | 697 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.461 | 3.464 | -0.003 | 9503729 | 52.0 | 104 | 23611 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.470 | 3.464 | 0.006 | 1.000 | 173302 | 1.01 | 101 | 3994 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.497 | 3.493 | 0.004 | 2430765 | 66.6 | 139 | 25847 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.497 | 3.493 | 0.004 | 1.000 | 43814 | 0.9481 | 99.0 | 1941 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.515 | 3.503 | 0.012 | 3991941 | 71.5 | 143 | 11784 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.515 | 3.503 | 0.012 | 1.000 | 73941 | 0.9451 | 94.5 | 297 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.661 | 3.655 | 0.006 | 1346439 | 62.0 | 124 | 12550 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.672 | 3.666 | 0.006 | 1.003 | 24102 | 0.9836 | 98.4 | 993 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.826 | 3.821 | 0.005 | 1.000 | 72811 | 1.03 | 106 | 2821 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.835 | 3.830 | 0.005 | 1416247 | 64.6 | 129 | 3949 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.843 | 3.839 | 0.004 | 2950078 | 72.4 | 145 | 11510 | |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.843 | 3.839 | 0.004 | 1.002 | 21517 | 0.8950 | 89.5 | 507 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.843 | 3.839 | 0.004 | 1.000 | 68344 | 1.02 | 102 | 153 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.950 | 3.946 | 0.004 | | 2379170 | | 101 | 609 | |
| 35 MeFOSA | 512.00 > 169.00 | 3.950 | 3.954 | -0.004 | 1.000 | 44135 | | 101 | 1755 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.130 | 4.130 | 0.0 | | 2395018 | | 98.1 | 5667 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.147 | 4.139 | 0.008 | | 2787559 | | 125 | 6202 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.147 | 4.139 | 0.008 | 1.000 | 50467 | | 97.4 | 25.6 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.138 | 4.139 | -0.001 | 1.000 | 45261 | | 102 | 1380 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.410 | 4.404 | 0.006 | 1.000 | 50567 | | 107 | 13.5 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.660 | 4.651 | 0.009 | | 5401490 | | 133 | 19940 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.660 | 4.651 | 0.009 | 1.000 | 133646 | | 125 | 8.1 | M |
| | 713.00 > 169.00 | 4.649 | 4.651 | -0.002 | 0.998 | 17500 | 7.64(0.00-0.00) | | 302 | M |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.084 | 5.069 | 0.015 | | 2823030 | | 137 | 4858 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.084 | 5.078 | 0.006 | 1.000 | 95542 | | 150 | 20.2 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.462 | 5.448 | 0.014 | 1.000 | 45247 | | 106 | 16.1 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L2_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45798.b\2017.07.24A_004.d

Injection Date: 24-Jul-2017 11:42:12

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

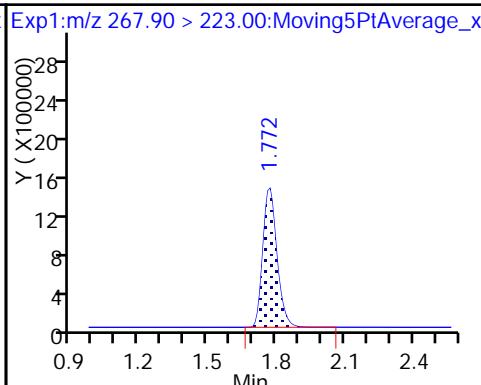
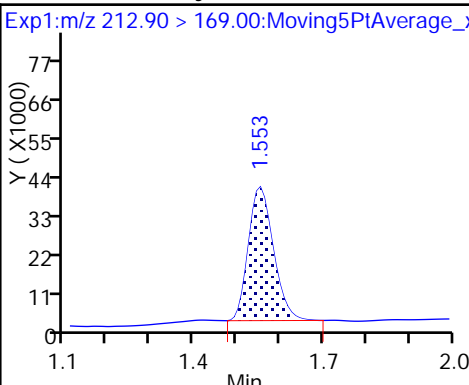
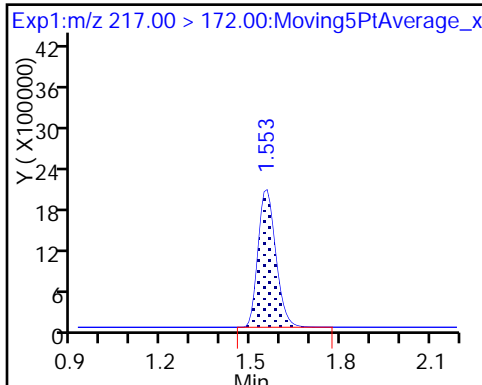
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

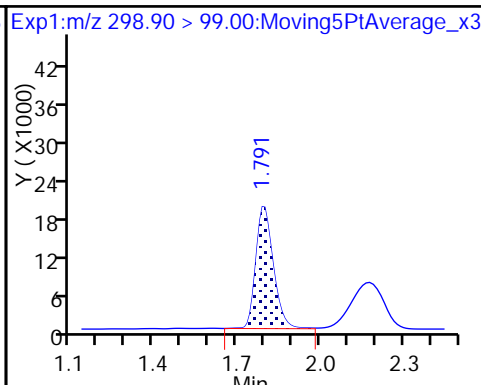
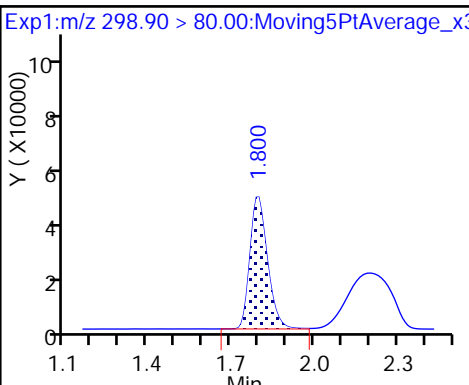
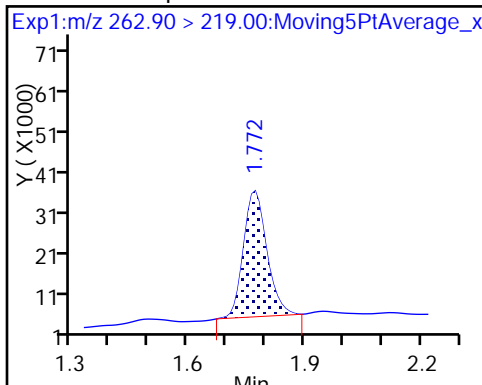
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

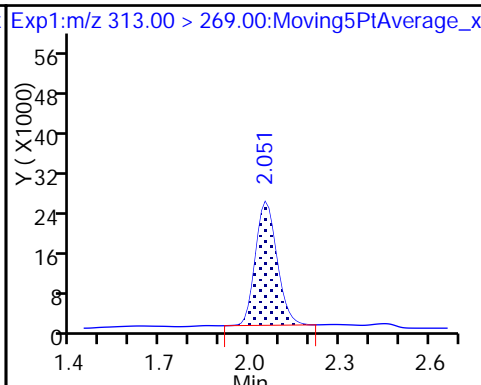
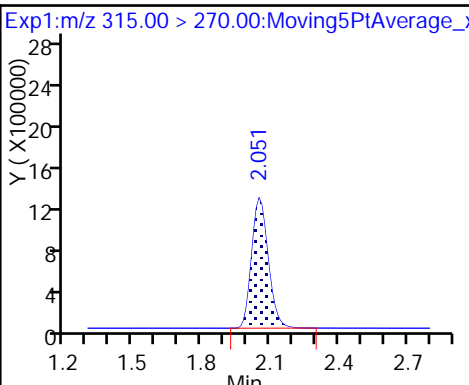
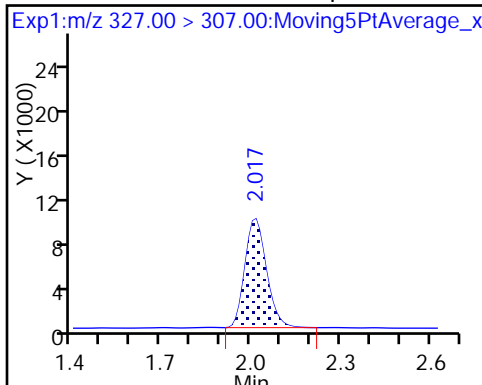
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

D 7 13C2 PFHxA

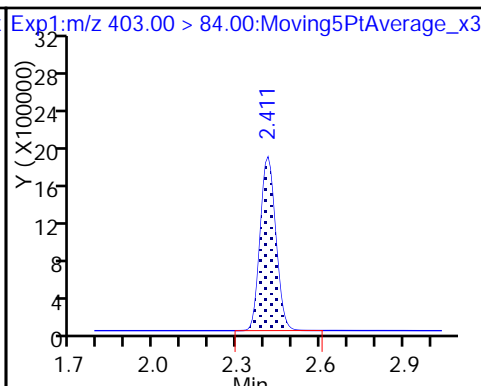
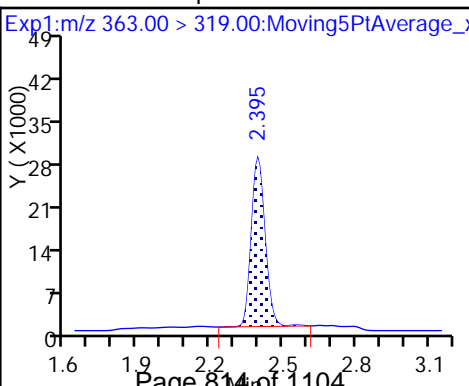
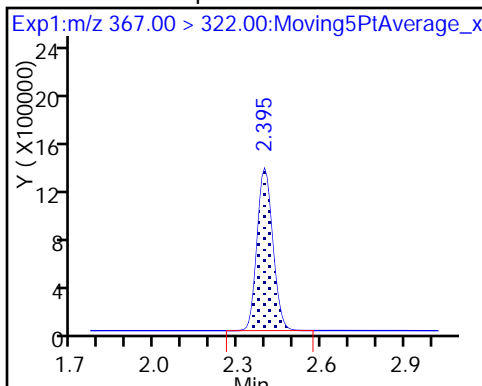
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

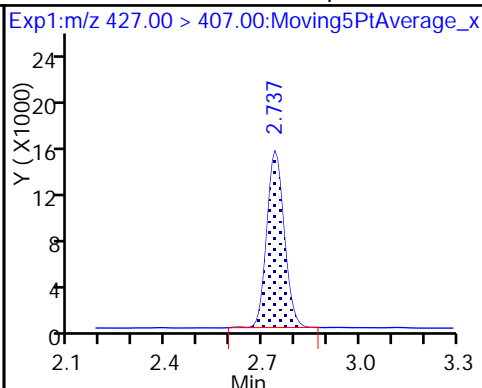
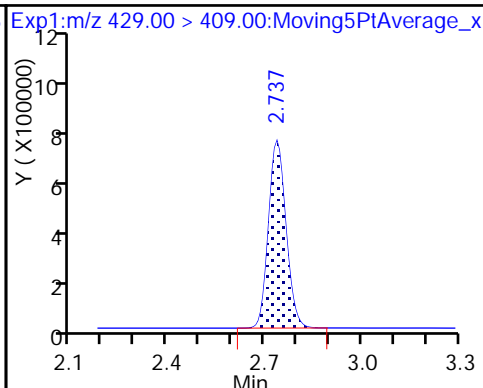
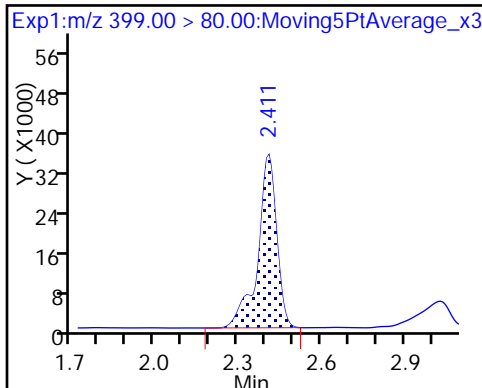
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

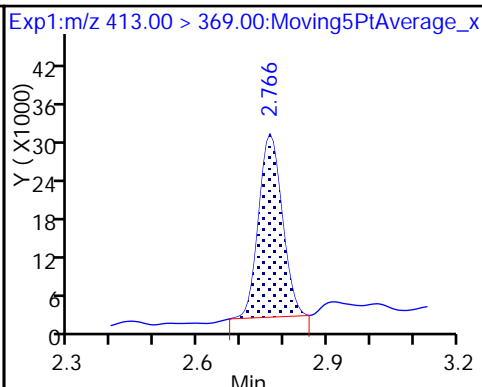
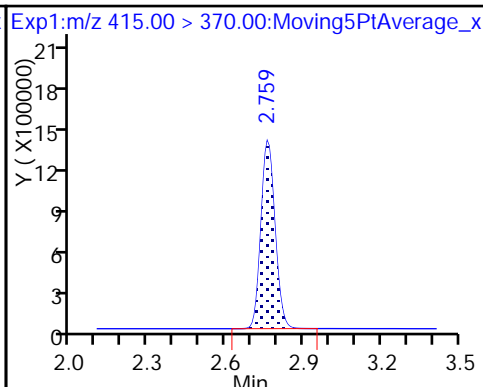
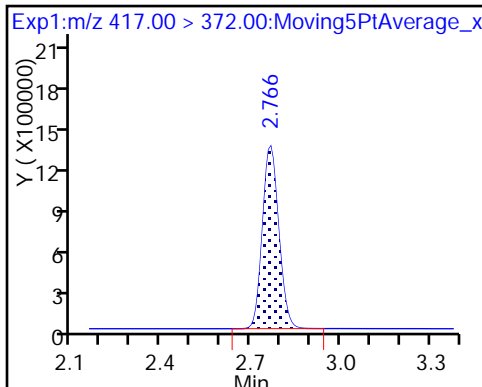
13 Sodium 1H,1H,2H,2H-perfluorooctane



D 14 13C4 PFOA

* 62 13C2-PFOA

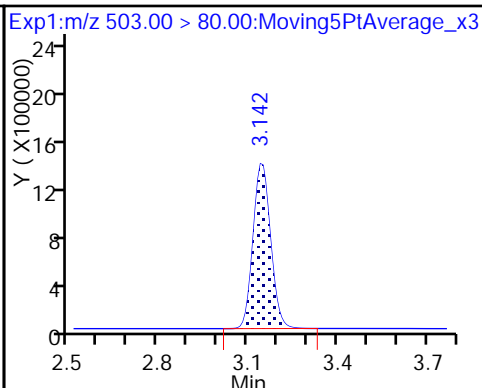
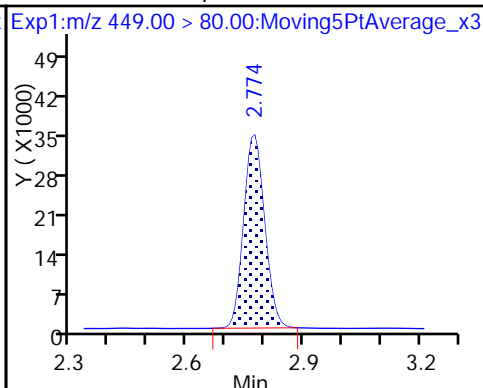
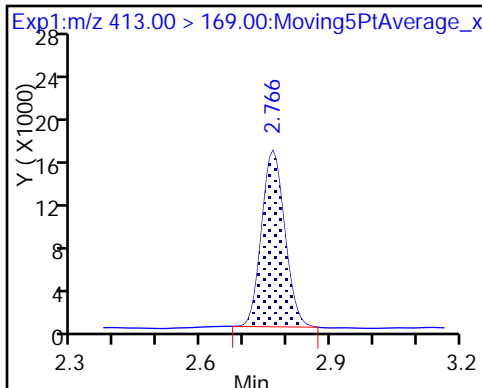
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

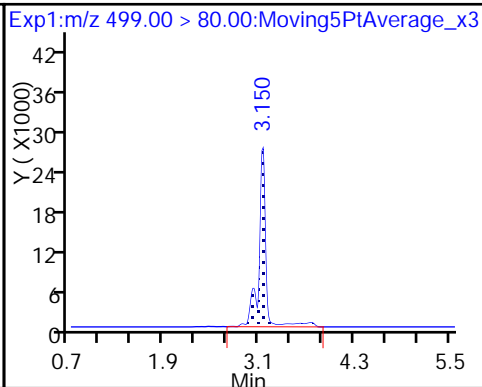
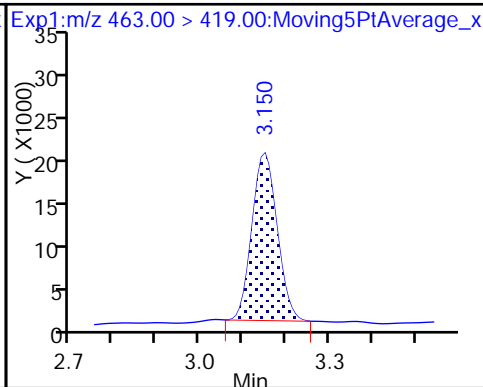
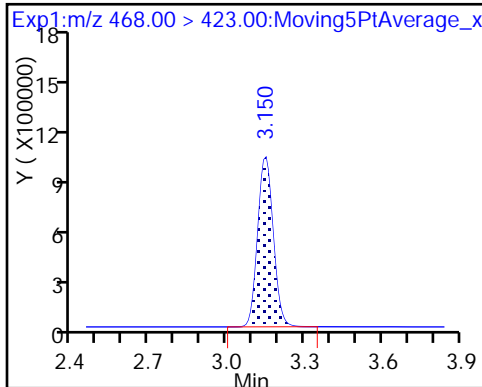
D 18 13C4 PFOS



D 19 13C5 PFNA

20 Perfluorononanoic acid

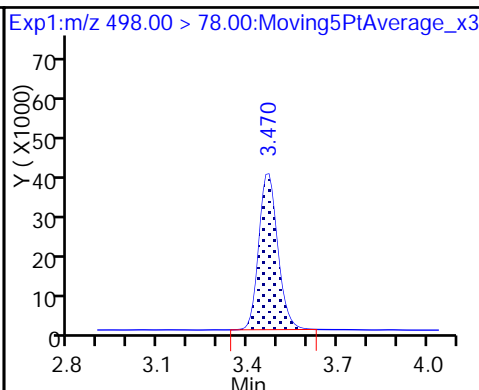
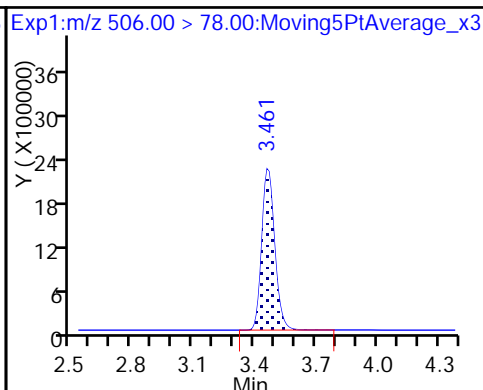
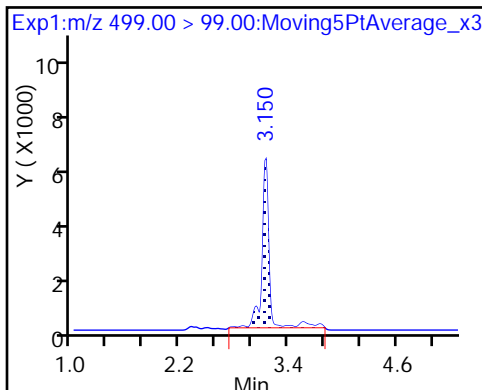
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 21 13C8 FOSA

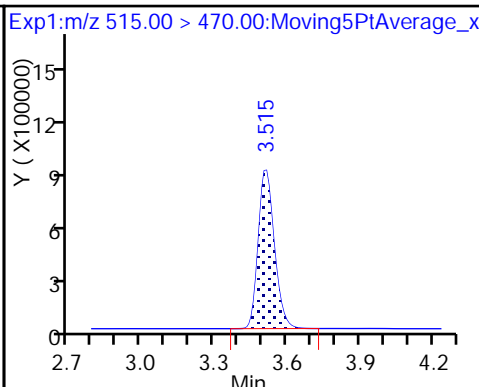
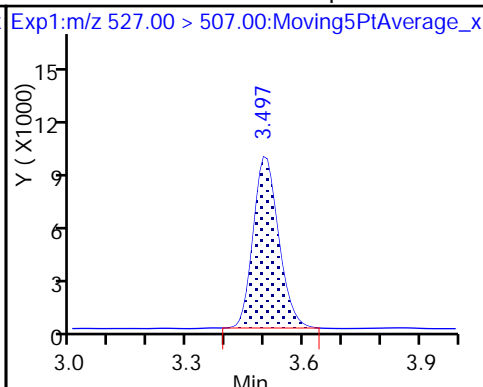
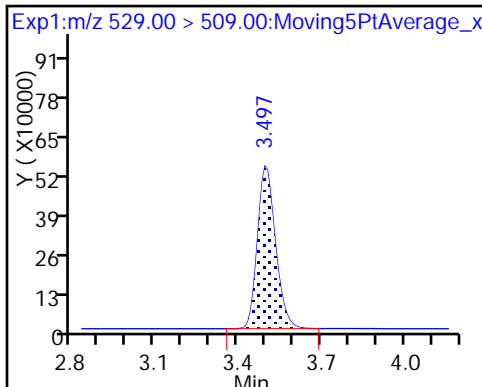
22 Perfluorooctane Sulfonamide



D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

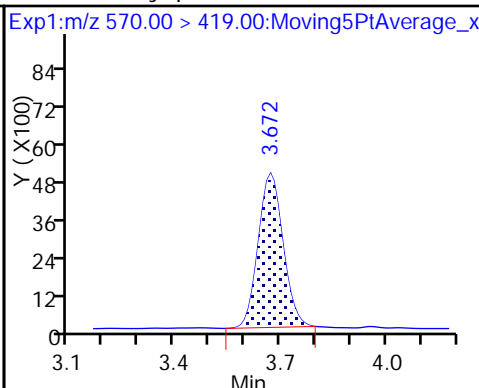
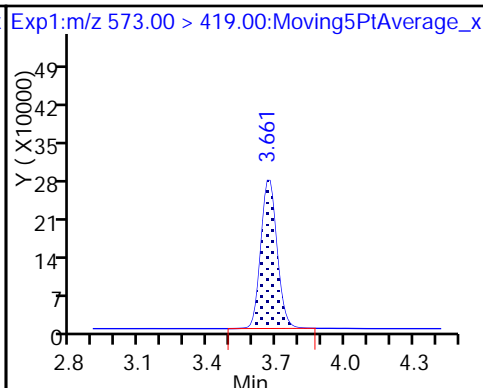
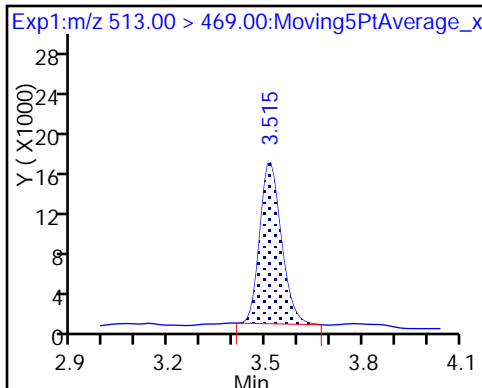
De23 13C2 PFDA



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

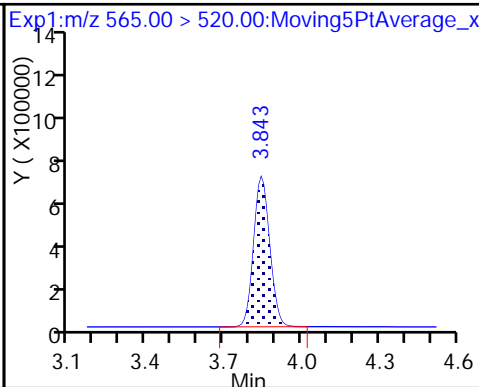
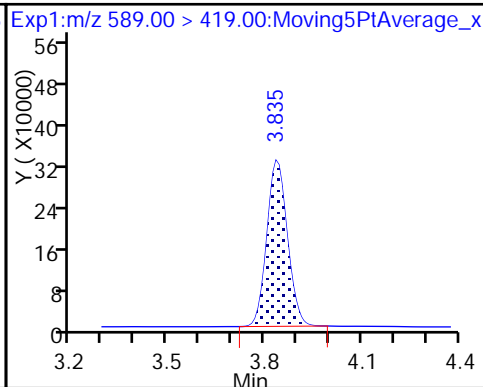
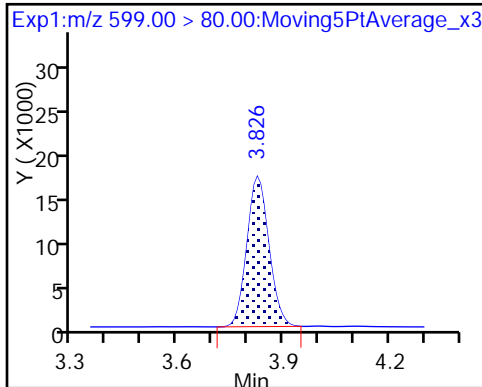
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

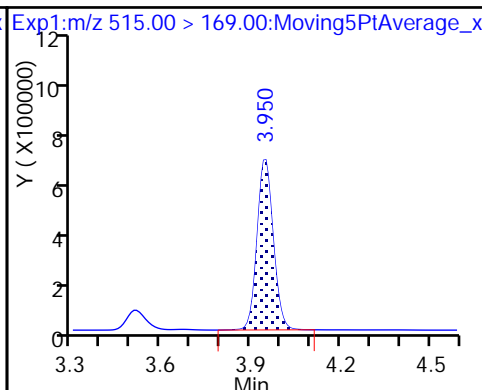
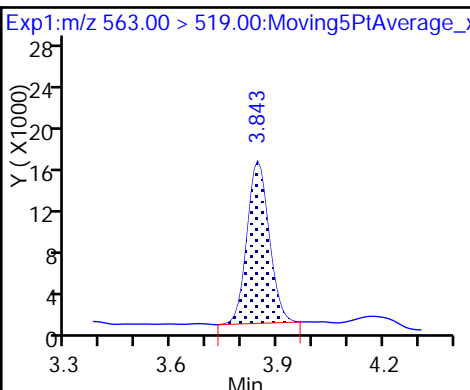
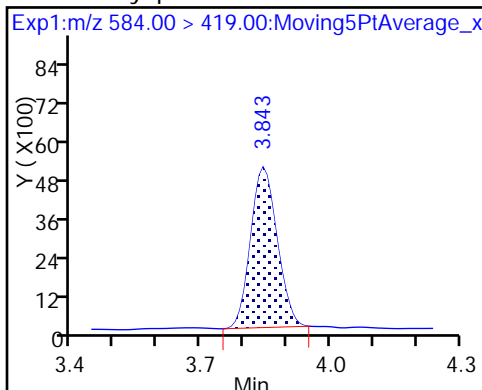
D 30 13C2 PFUnA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

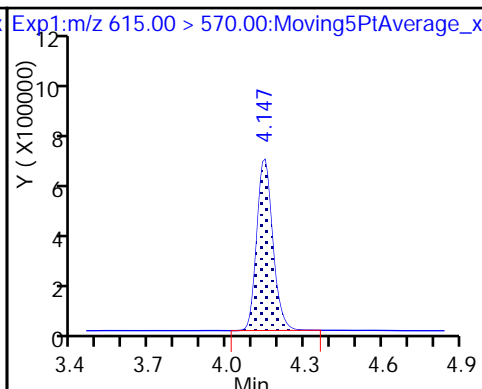
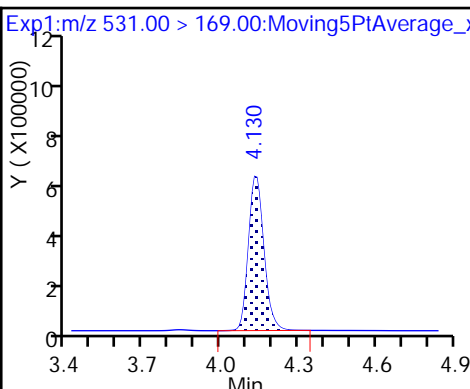
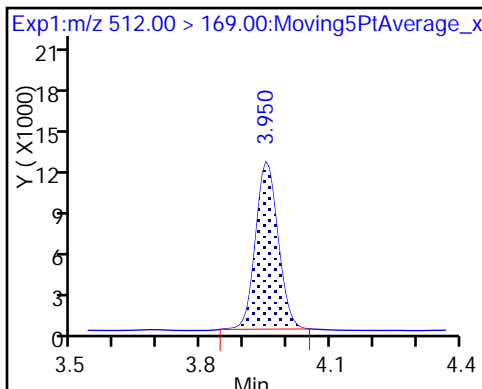
D 34 d-N-MeFOSA-M



35 MeFOSA

D 38 d-N-EtFOSA-M

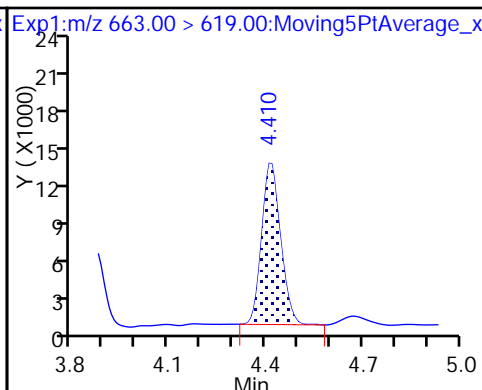
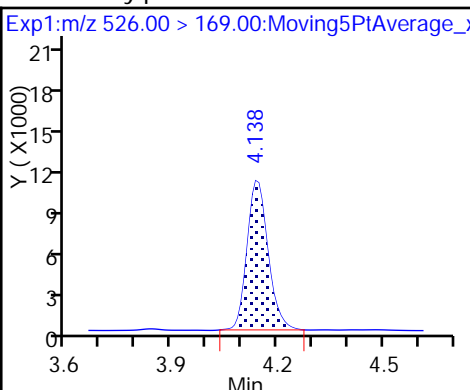
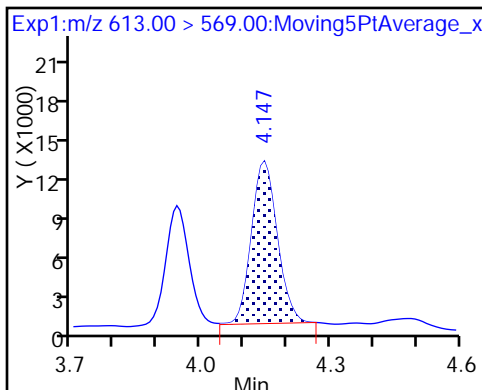
D 36 13C2 PFDaA



37 Perfluorododecanoic acid

39 N-ethylperfluoro-1-octanesulfonami

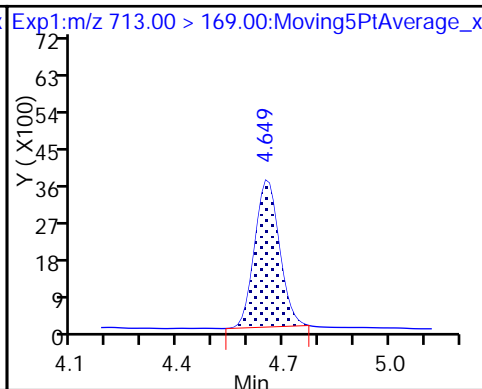
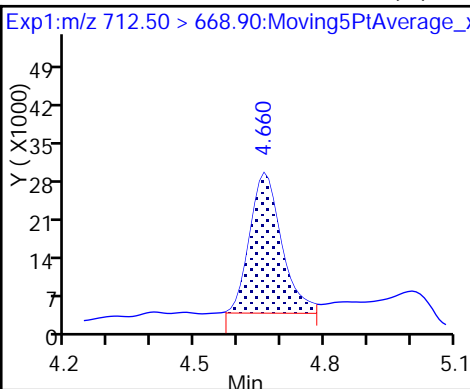
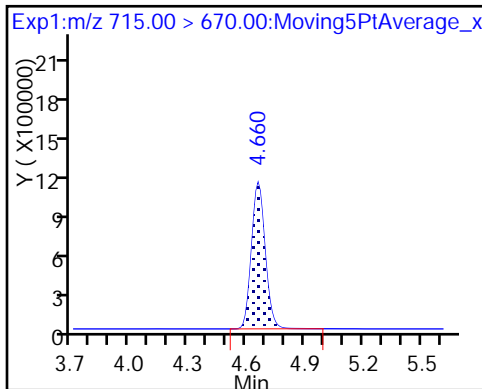
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid (M)

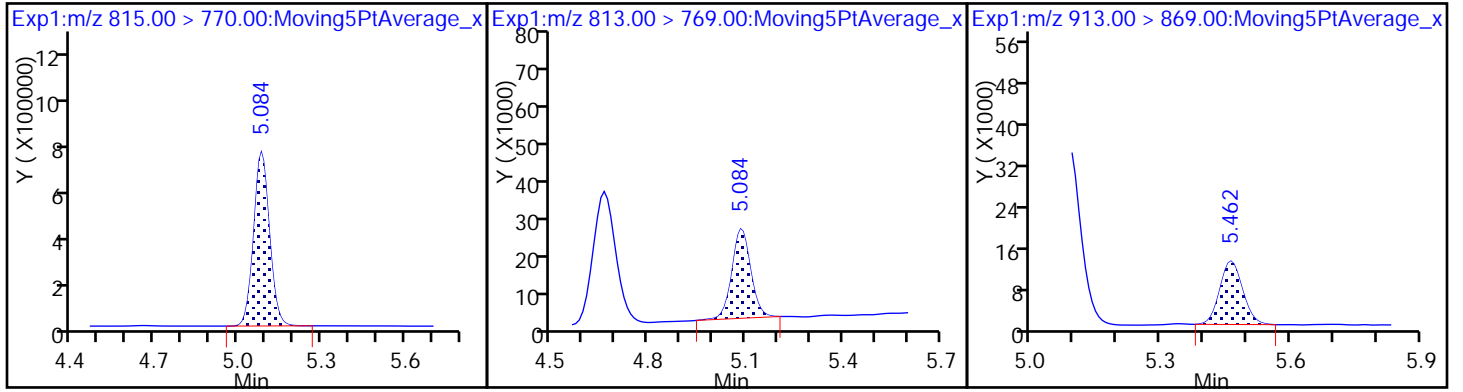
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento

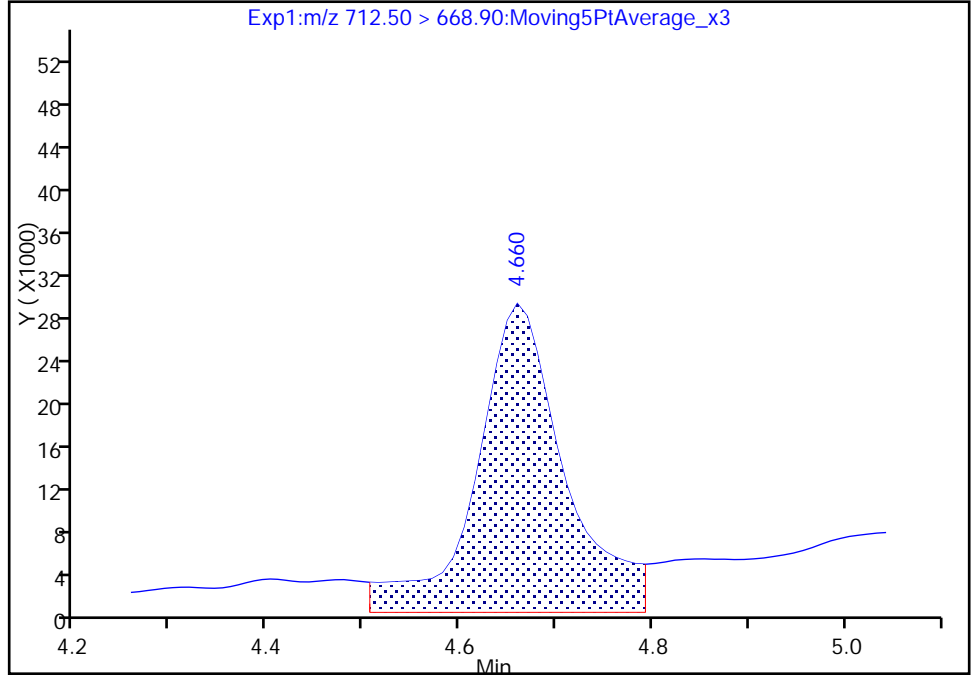
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45798.b\2017.07.24A_004.d
Injection Date: 24-Jul-2017 11:42:12 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

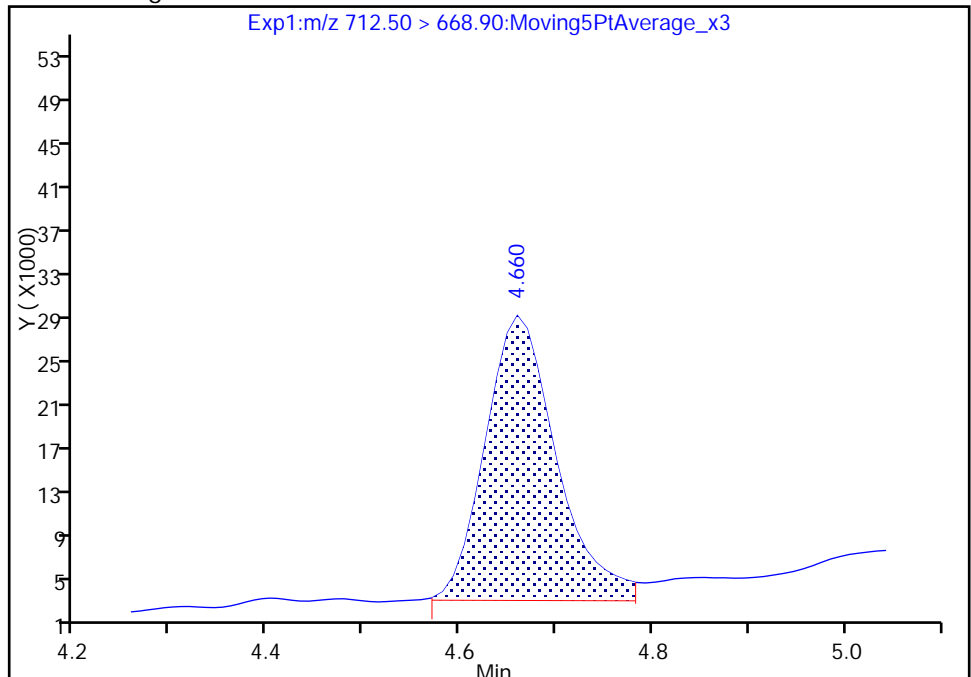
RT: 4.66
Area: 184780
Amount: 1.724401
Amount Units: ng/ml

Processing Integration Results



RT: 4.66
Area: 133646
Amount: 1.247209
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 24-Jul-2017 13:21:52

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175757/1 Calibration Date: 07/24/2017 20:00
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24AA_028.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9374 | | 53.1 | 50.0 | 6.3 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 0.9923 | | 47.6 | 50.0 | -4.8 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.511 | | 44.9 | 44.2 | 1.5 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9065 | | 47.6 | 50.0 | -4.8 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9777 | | 47.6 | 50.0 | -4.7 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 0.9858 | | 41.5 | 45.5 | -8.9 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8518 | | 45.1 | 47.4 | -4.9 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 0.9891 | | 46.4 | 50.0 | -7.3 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.253 | | 53.2 | 47.6 | 11.7 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9508 | | 46.7 | 50.0 | -6.6 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.038 | | 45.5 | 46.4 | -1.9 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.8680 | | 45.7 | 47.9 | -4.7 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.8948 | | 49.6 | 50.0 | -0.8 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9289 | | 47.4 | 50.0 | -5.2 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9241 | | 50.8 | 50.0 | 1.5 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6731 | | 52.1 | 48.2 | 8.1 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8254 | | 48.6 | 50.0 | -2.8 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 0.9616 | | 46.8 | 50.0 | -6.4 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8895 | | 48.4 | 50.0 | -3.1 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.8254 | | 44.4 | 50.0 | -11.2 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9129 | | 49.2 | 50.0 | -1.6 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8610 | | 50.6 | 50.0 | 1.1 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.879 | | 48.9 | 50.0 | -2.2 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8600 | | 53.7 | 50.0 | 7.3 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8788 | | 57.4 | 50.0 | 14.8 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 161351 | | 51.7 | 50.0 | 3.4 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 114786 | | 51.9 | 50.0 | 3.9 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 109880 | | 54.3 | 50.0 | 8.6 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 91403 | | 54.5 | 50.0 | 9.0 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 138032 | | 47.5 | 47.3 | 0.4 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 46183 | | 46.1 | 47.5 | -2.9 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175757/1 Calibration Date: 07/24/2017 20:00
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24AA_028.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|-------|--------|
| 13C4 PFOA | Ave | 82143 | 86191 | | 52.5 | 50.0 | 4.9 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 96791 | | 42.8 | 47.8 | -10.5 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 66393 | | 50.5 | 50.0 | 1.0 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 170266 | | 46.6 | 50.0 | -6.9 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 32386 | | 42.5 | 47.9 | -11.3 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 54898 | | 49.2 | 50.0 | -1.7 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 19126 | | 44.0 | 50.0 | -12.0 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 21026 | | 47.9 | 50.0 | -4.1 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 41702 | | 51.2 | 50.0 | 2.4 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 45477 | | 48.3 | 50.0 | -3.5 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 42599 | | 47.7 | 50.0 | -4.6 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 47505 | | 48.6 | 50.0 | -2.7 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 82254 | | 50.6 | 50.0 | 1.3 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 44625 | | 54.0 | 50.0 | 8.0 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_028.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 24-Jul-2017 20:00:55 ALS Bottle#: 32 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 25-Jul-2017 11:29:47 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 11:27:14

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.547 | 1.547 | 0.0 | 1.000 | 7562500 | 53.1 | 106 | 3884 | |
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.547 | 1.547 | 0.0 | | 8067530 | 51.7 | 103 | 38430 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.756 | 1.756 | 0.0 | 1.000 | 5694948 | 47.6 | 95.2 | 3305 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.756 | 1.756 | 0.0 | | 5739309 | 51.9 | 104 | 76408 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.784 | 1.784 | 0.0 | 1.000 | 9220802 | 44.9 | 101 | 5768 | |
| | 298.90 > 99.00 | 1.784 | 1.784 | 0.0 | 1.000 | 3815568 | 2.42(0.00-0.00) | | 5634 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.784 | 1.784 | 0.0 | | 145282 | NC | | 6881 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.997 | 1.997 | 0.0 | 1.000 | 2092077 | 46.6 | 99.9 | 59924 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.032 | 2.032 | 0.0 | 1.000 | 4980449 | 47.6 | 95.2 | 12805 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.032 | 2.032 | 0.0 | | 5493990 | 54.3 | 109 | 43863 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.366 | 2.366 | 0.0 | 1.000 | 4468281 | 47.6 | 95.3 | 11503 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.366 | 2.366 | 0.0 | | 4570166 | 54.5 | 109 | 23930 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.382 | 2.382 | 0.0 | 1.000 | 6190955 | 41.5 | 91.1 | 4711 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.382 | 2.382 | 0.0 | | 6528900 | 47.5 | 100 | 26550 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|-------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.704 | 2.704 | 0.0 | 1.000 | 1864663 | 45.1 | 95.1 | 55898 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.704 | 2.704 | 0.0 | | 2193704 | 46.1 | 97.1 | 32779 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.725 | 2.725 | 0.0 | | 4297393 | 50.0 | 100 | 27783 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.733 | 2.733 | 0.0 | 1.000 | 4262516 | 46.4 | 92.7 | 757 |
| | 413.00 | > 169.00 | 2.733 | 2.733 | 0.0 | 1.000 | 2446320 | | 1.74(0.90-1.10) | 11893 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.733 | 2.733 | 0.0 | | 4309567 | 52.5 | 105 | 29596 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.740 | 2.740 | 0.0 | 1.000 | 5773642 | 53.2 | 112 | 29805 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.108 | 3.108 | 0.0 | 1.000 | 4659560 | 45.5 | 98.1 | 7634 |
| | 499.00 | > 99.00 | 3.108 | 3.108 | 0.0 | 1.000 | 1005472 | | 4.63(0.90-1.10) | 22646 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.108 | 3.108 | 0.0 | 1.000 | 3156234 | 46.7 | 93.4 | 7006 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.108 | 3.108 | 0.0 | | 3319649 | 50.5 | 101 | 16857 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.108 | 3.108 | 0.0 | | 4626626 | 42.8 | 89.5 | 17054 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.457 | 3.457 | 0.0 | 1.000 | 7617380 | 49.6 | 99.2 | 15242 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.457 | 3.457 | 0.0 | 1.000 | 1346447 | 45.7 | 95.3 | 16422 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.457 | 3.457 | 0.0 | | 8513317 | 46.6 | 93.1 | 19373 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.457 | 3.457 | 0.0 | | 1551281 | 42.5 | 88.7 | 17859 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.467 | 3.467 | 0.0 | 1.000 | 2549869 | 47.4 | 94.8 | 8988 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.467 | 3.467 | 0.0 | | 2744923 | 49.2 | 98.3 | 11109 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.621 | 3.621 | 0.0 | | 956312 | 44.0 | 88.0 | 5933 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.631 | 3.631 | 0.0 | 1.003 | 883677 | 50.8 | 102 | 7933 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.778 | 3.778 | 0.0 | 1.000 | 3140000 | 52.1 | 108 | 9734 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.788 | 3.788 | 0.0 | | 1051299 | 47.9 | 95.9 | 3147 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.797 | 3.797 | 0.0 | 1.000 | 2005052 | 46.8 | 93.6 | 2589 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.797 | 3.797 | 0.0 | 1.003 | 867716 | 48.6 | 97.2 | 7361 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.797 | 3.797 | 0.0 | | 2085103 | 51.2 | 102 | 7389 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.948 | 3.948 | 0.0 | 2273826 | 48.3 | 96.5 | 835 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.957 | 3.957 | 0.0 | 1.000 | 2022454 | 48.4 | 96.9 | 5854 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.095 | 4.095 | 0.0 | 1.000 | 1758090 | 44.4 | 88.8 | 1844 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.095 | 4.095 | 0.0 | | 2129957 | 47.7 | 95.4 | 4840 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.138 | 4.138 | 0.0 | | 2375266 | 48.6 | 97.3 | 5321 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.146 | 4.146 | 0.0 | 1.000 | 2168444 | 49.2 | 98.4 | 6189 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.358 | 4.358 | 0.0 | 1.000 | 1833780 | 50.6 | 101 | 906 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.596 | 4.596 | 0.0 | 1.000 | 4003181 | 48.9 | 97.8 | 395 |
| | 713.00 | > 169.00 | 4.596 | 4.596 | 0.0 | 1.000 | 478241 | 8.37(0.00-0.00) | | 5489 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.596 | 4.596 | 0.0 | | 4112686 | 50.6 | 101 | 20381 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.018 | 5.018 | 0.0 | | 2231267 | 54.0 | 108 | 3769 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.018 | 5.018 | 0.0 | 1.000 | 1831848 | 53.7 | 107 | 213 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.368 | 5.368 | 0.0 | 1.000 | 1871771 | 57.4 | 115 | 892 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_028.d

Injection Date: 24-Jul-2017 20:00:55

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

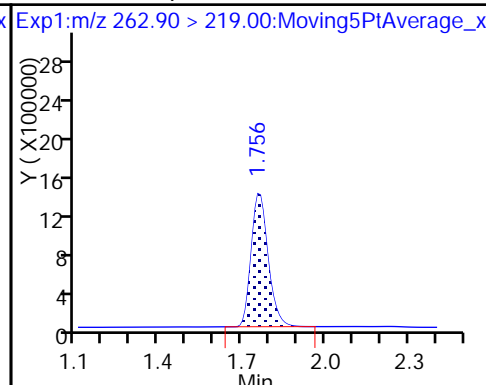
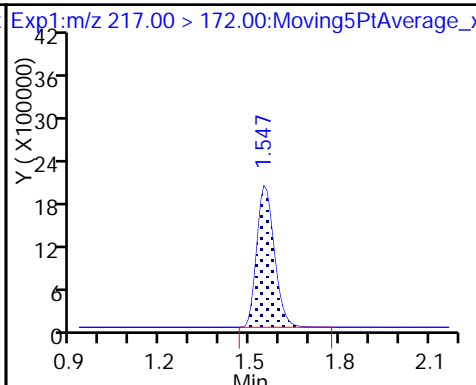
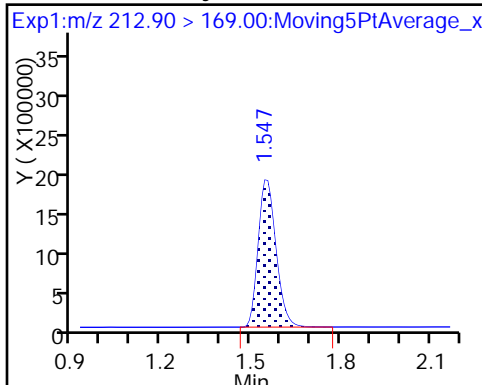
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

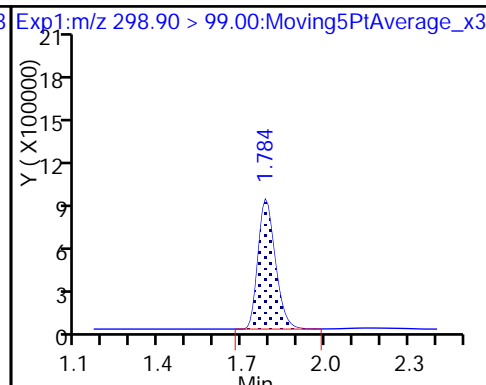
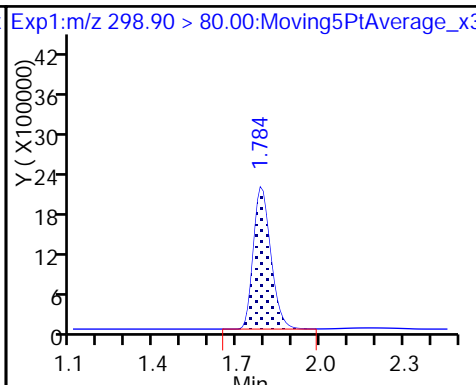
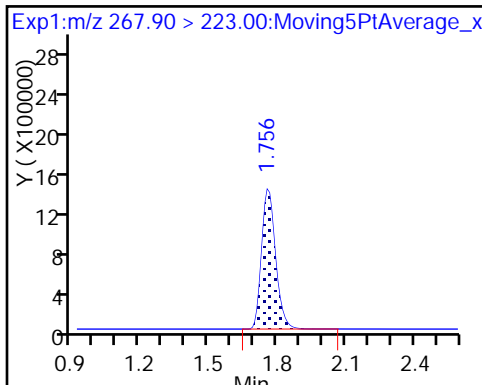
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

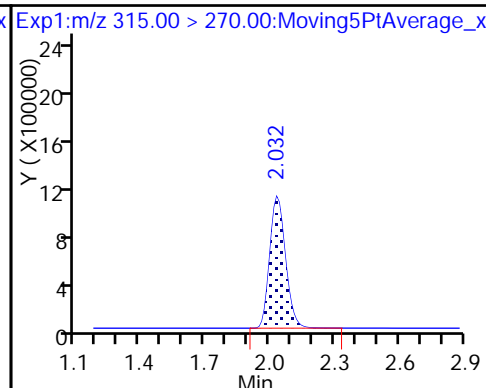
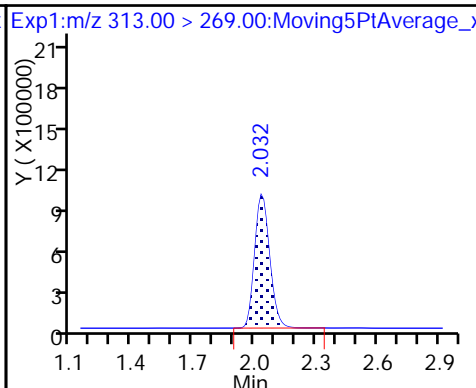
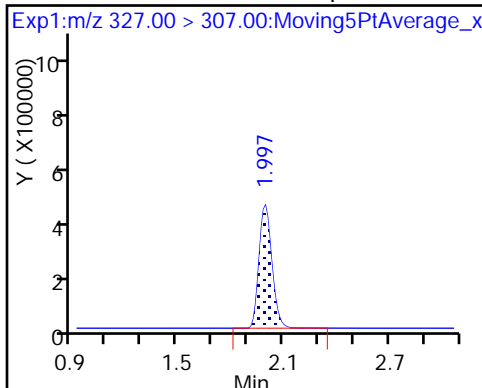
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

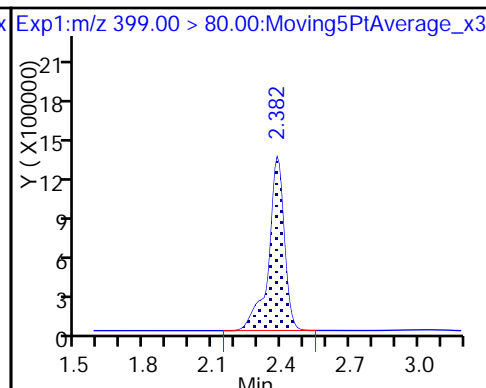
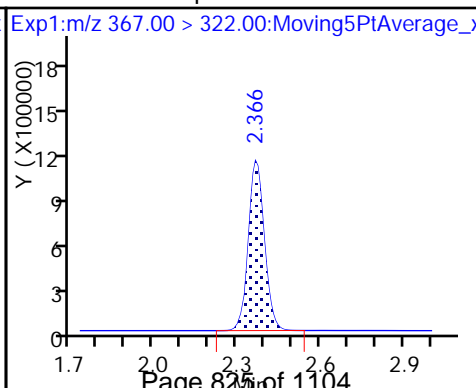
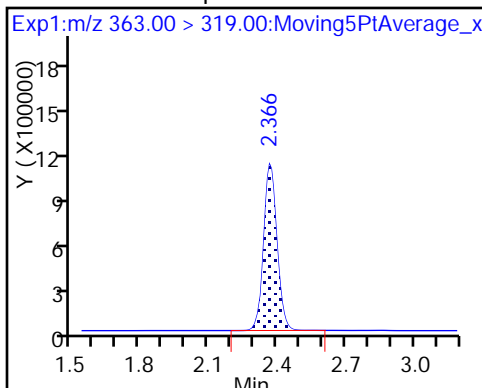
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

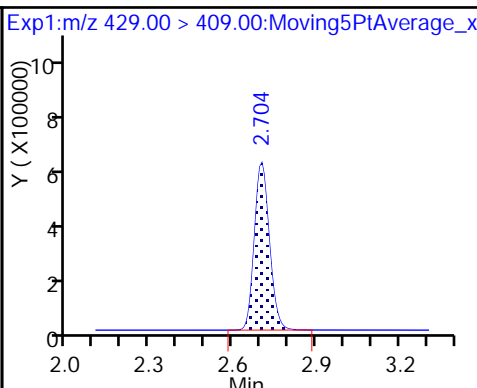
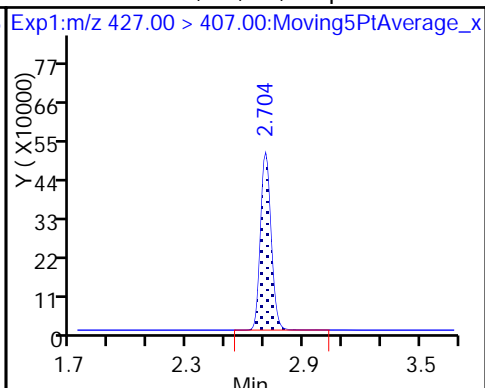
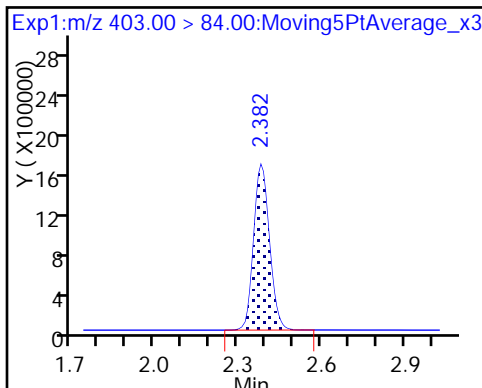
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoic acid

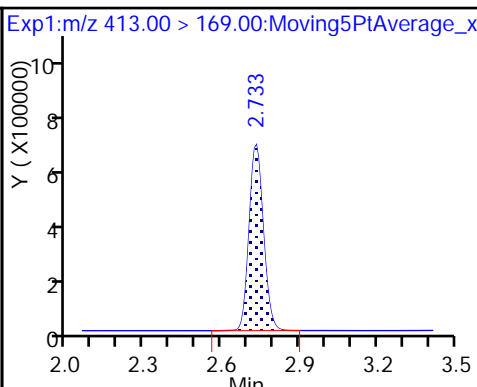
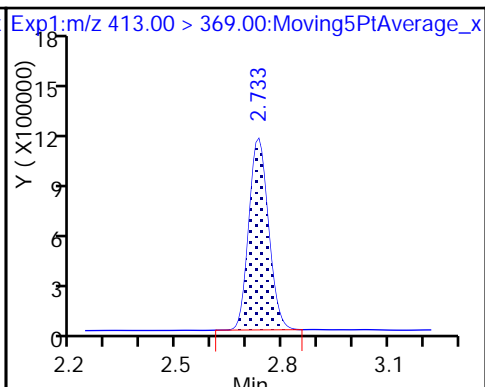
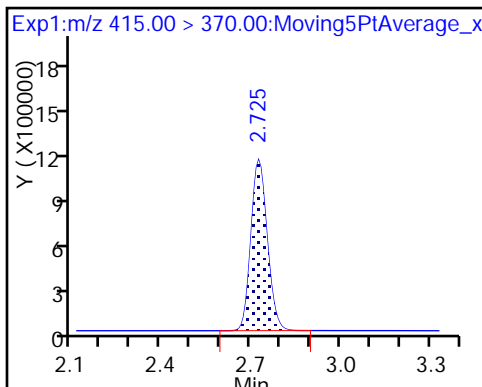
D 12 M2-6:2FTS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

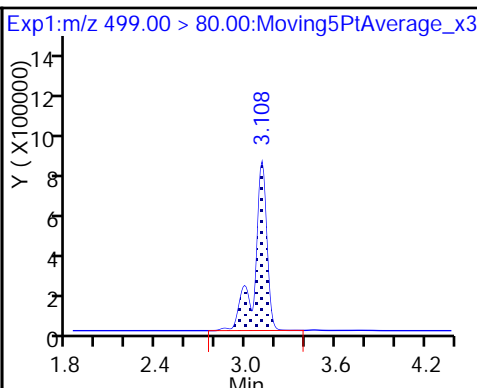
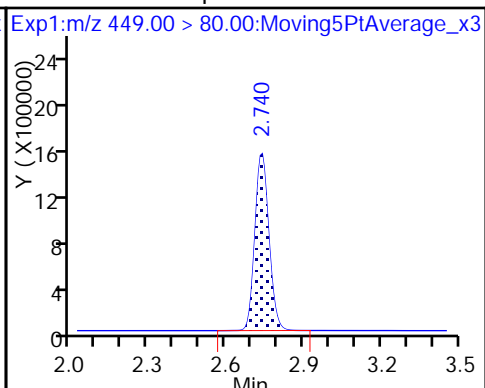
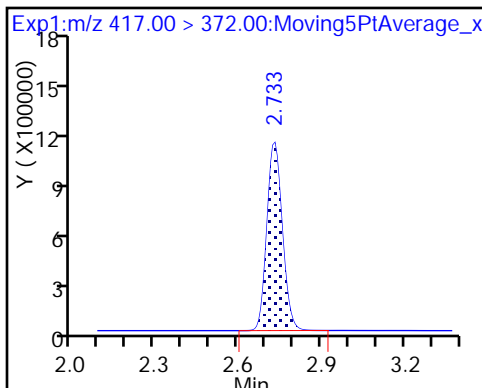
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

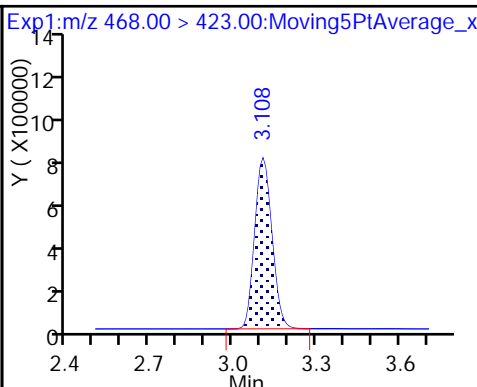
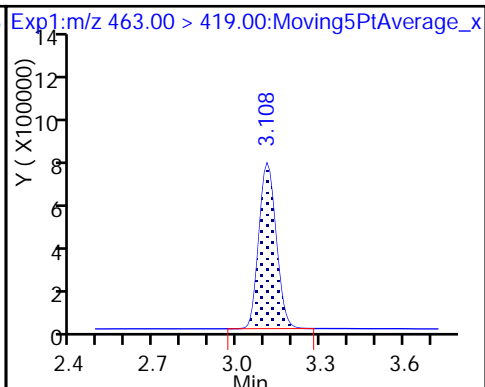
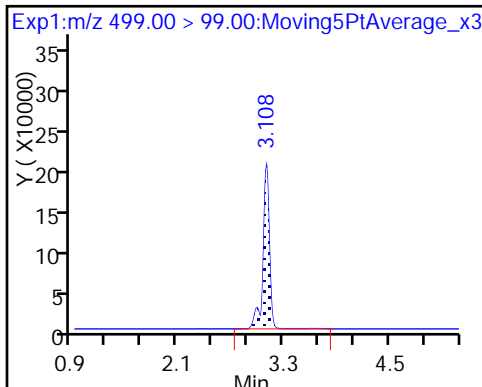
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

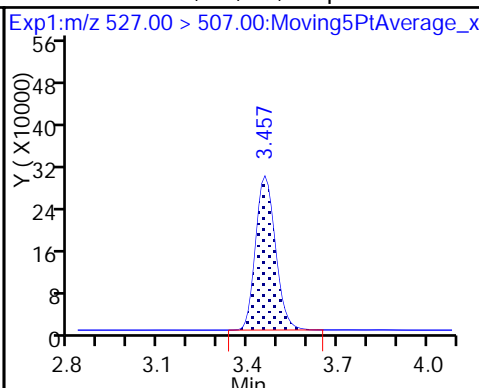
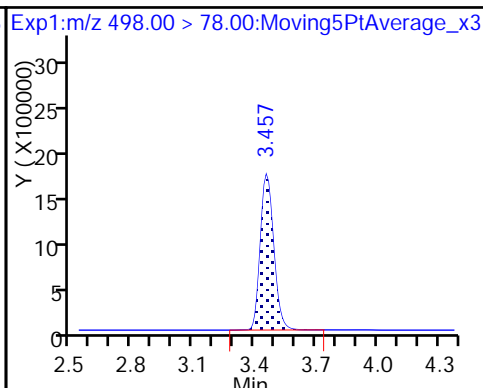
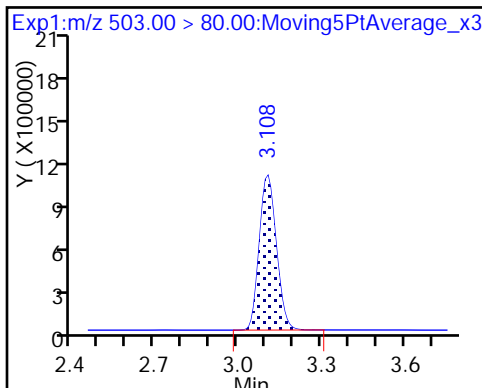
D 19 13C5 PFNA



D 18 13C4 PFOS

22 Perfluorooctane Sulfonamide

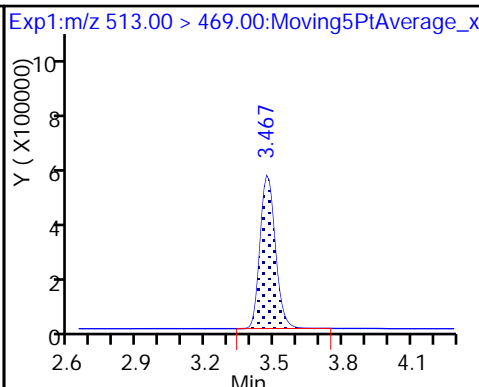
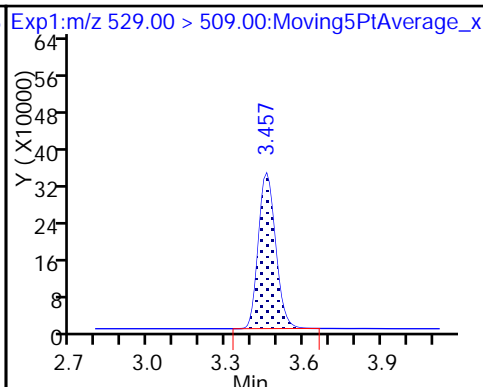
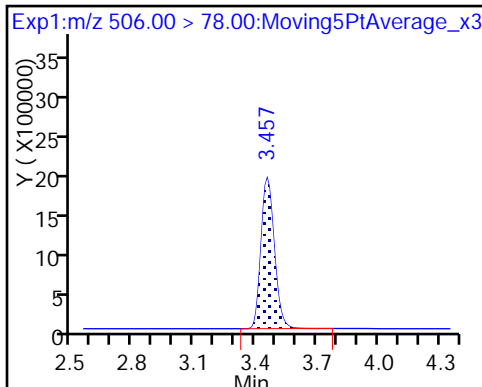
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 21 13C8 FOSA

D 26 M2-8:2FTS

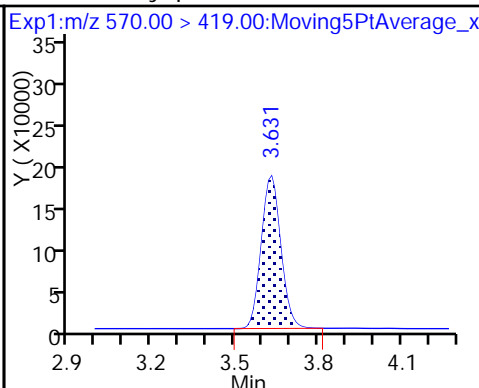
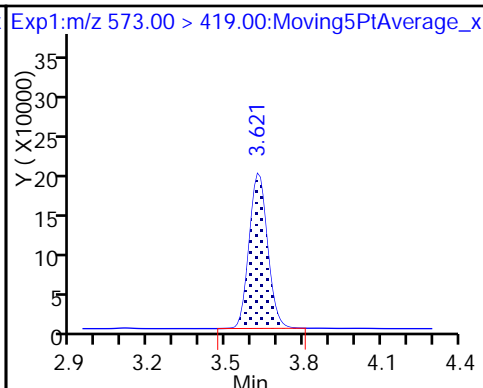
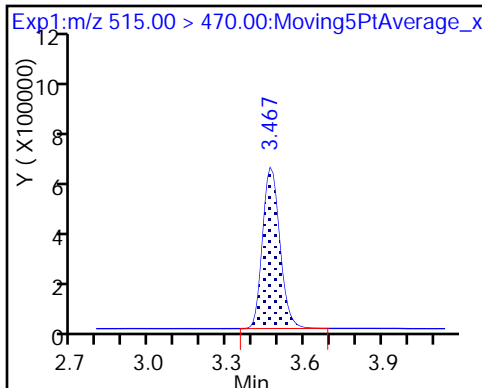
24 Perfluorodecanoic acid



D 23 13C2 PFDA

D 27 d3-NMeFOSAA

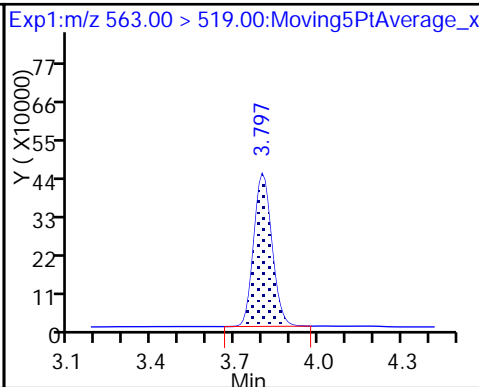
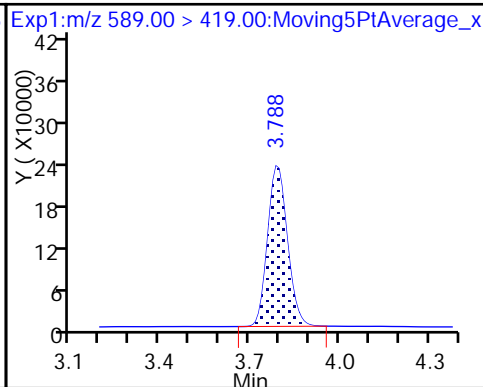
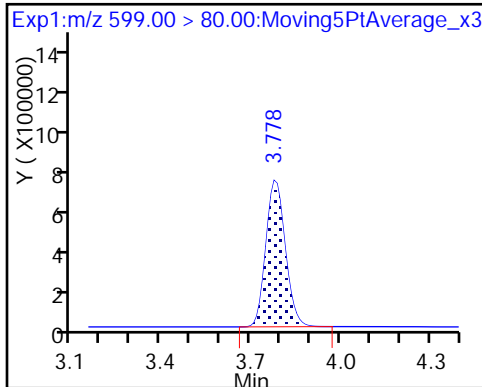
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

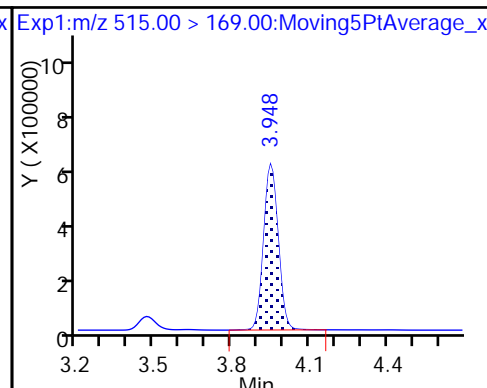
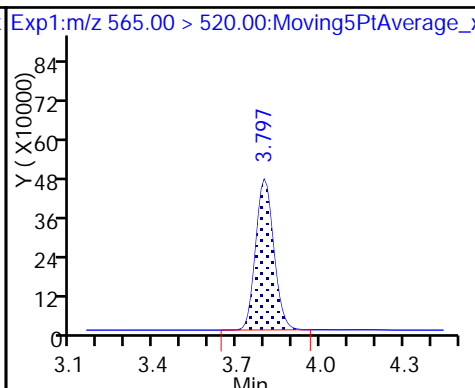
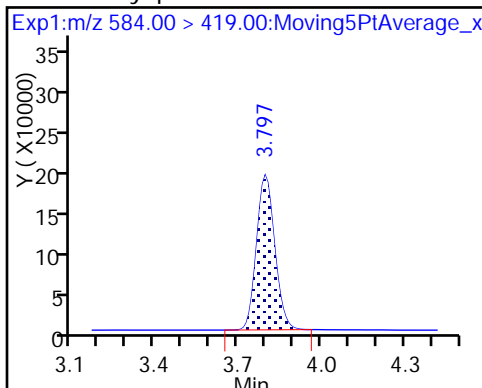
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUa

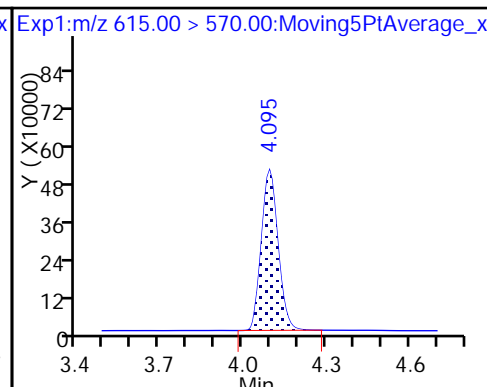
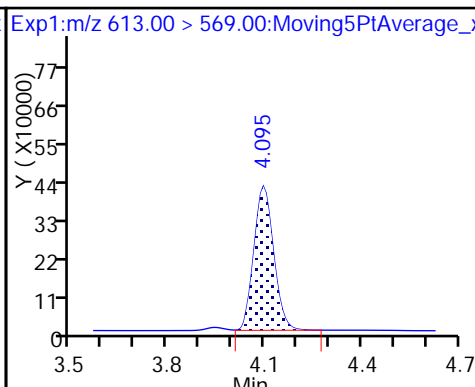
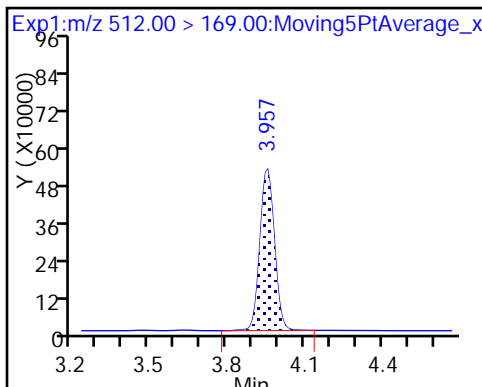
D 34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

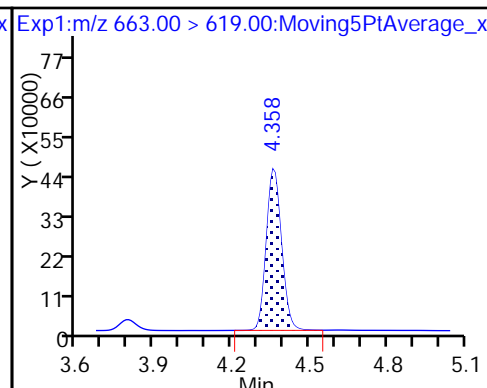
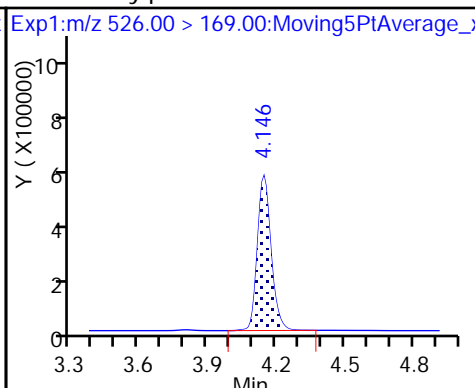
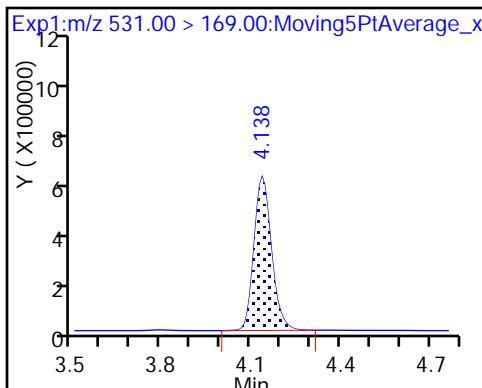
D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

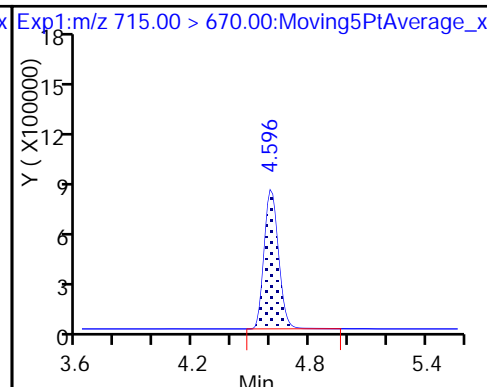
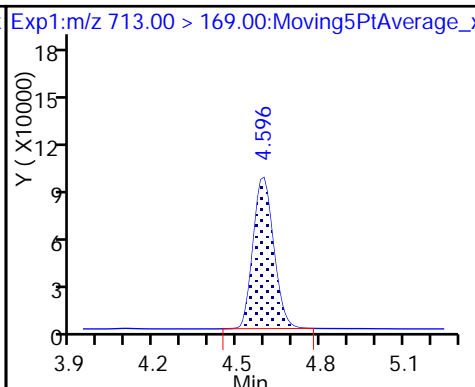
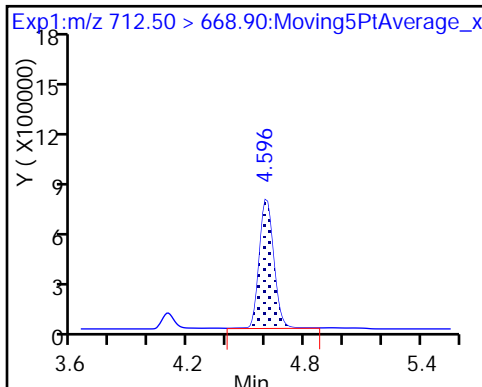
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

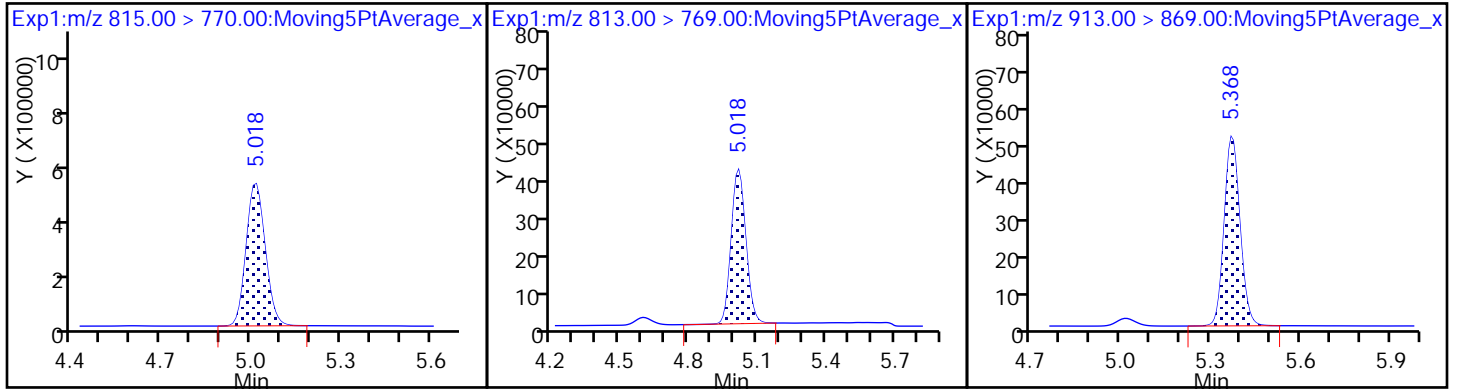
D 43 13C2-PFTeDA



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175757/4 Calibration Date: 07/24/2017 20:21
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24AA_031.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9212 | | 20.9 | 20.0 | 4.4 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.022 | | 19.6 | 20.0 | -1.9 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.608 | | 19.1 | 17.7 | 8.0 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9205 | | 19.3 | 20.0 | -3.3 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.002 | | 19.5 | 20.0 | -2.4 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.012 | | 17.0 | 18.2 | -6.4 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8829 | | 18.7 | 19.0 | -1.4 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.262 | | 21.4 | 19.0 | 12.5 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.051 | | 19.7 | 20.0 | -1.5 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9643 | | 18.9 | 20.0 | -5.3 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.065 | | 18.7 | 18.6 | 0.8 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9202 | | 19.4 | 19.2 | 1.1 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9315 | | 20.7 | 20.0 | 3.3 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.8900 | | 18.2 | 20.0 | -9.2 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9110 | | 20.0 | 20.0 | 0.1 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6850 | | 21.2 | 19.3 | 10.1 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8562 | | 20.2 | 20.0 | 0.9 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.076 | | 20.9 | 20.0 | 4.4 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8960 | | 19.5 | 20.0 | -2.4 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9904 | | 21.3 | 20.0 | 6.6 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9344 | | 20.2 | 20.0 | 0.8 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 1.037 | | 24.4 | 20.0 | 21.8 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.390 | | 24.9 | 20.0 | 24.3 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 1.217 | | 30.1 | 20.0 | 50.4* | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 1.104 | | 28.8 | 20.0 | 44.2* | 25.0 |
| 13C4 PFBA | Ave | 156025 | 170093 | | 54.5 | 50.0 | 9.0 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 120405 | | 54.5 | 50.0 | 9.0 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 113025 | | 55.9 | 50.0 | 11.7 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 94663 | | 56.5 | 50.0 | 12.9 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 138985 | | 47.8 | 47.3 | 1.1 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 45911 | | 45.9 | 47.5 | -3.5 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175757/4 Calibration Date: 07/24/2017 20:21
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24AA_031.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|-------|--------|
| 13C4 PFOA | Ave | 82143 | 88695 | | 54.0 | 50.0 | 8.0 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 100104 | | 44.2 | 47.8 | -7.5 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 69492 | | 52.9 | 50.0 | 5.7 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 177867 | | 48.7 | 50.0 | -2.7 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 34924 | | 45.8 | 47.9 | -4.3 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 61632 | | 55.2 | 50.0 | 10.4 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 20578 | | 47.3 | 50.0 | -5.3 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 21152 | | 48.2 | 50.0 | -3.6 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 45507 | | 55.9 | 50.0 | 11.7 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 45766 | | 48.6 | 50.0 | -2.9 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 46012 | | 51.5 | 50.0 | 3.0 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 47471 | | 48.6 | 50.0 | -2.8 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 109330 | | 67.3 | 50.0 | 34.6 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 63303 | | 76.6 | 50.0 | 53.3* | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_031.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 24-Jul-2017 20:21:37 ALS Bottle#: 31 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 25-Jul-2017 11:29:51 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 11:29:39

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.556 | 1.547 | 0.009 | 1.000 | 3133774 | 20.9 | 104 | 1501 | |
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.556 | 1.547 | 0.009 | | 8504673 | 54.5 | 109 | 38396 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.775 | 1.756 | 0.019 | 1.000 | 2462230 | 19.6 | 98.1 | 1437 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.775 | 1.756 | 0.019 | | 6020245 | 54.5 | 109 | 54904 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.802 | 1.784 | 0.018 | 1.000 | 3951955 | 19.1 | 108 | 2538 | |
| | 298.90 > 99.00 | 1.802 | 1.784 | 0.018 | 1.000 | 1522350 | 2.60(0.00-0.00) | | 2318 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.793 | 1.784 | 0.009 | | 144772 | NC | | 8247 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.009 | 1.997 | 0.012 | 1.000 | 831848 | 18.7 | 99.9 | 33289 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.054 | 2.032 | 0.022 | 1.000 | 2080892 | 19.3 | 96.7 | 7634 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.054 | 2.032 | 0.022 | | 5651265 | 55.9 | 112 | 37413 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.394 | 2.366 | 0.028 | 1.000 | 1896792 | 19.5 | 97.6 | 6735 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.386 | 2.366 | 0.020 | | 4733155 | 56.5 | 113 | 26577 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.402 | 2.382 | 0.020 | 1.000 | 2560383 | 17.0 | 93.6 | 3530 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.402 | 2.382 | 0.020 | | 6573996 | 47.8 | 101 | 26121 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|-------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.729 | 2.704 | 0.025 | 1.000 | 768494 | 18.7 | 98.6 | 20426 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.729 | 2.704 | 0.025 | | 2180774 | 45.9 | 96.5 | 36173 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.751 | 2.725 | 0.026 | | 4448232 | 50.0 | 100 | 28021 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.758 | 2.733 | 0.025 | 1.000 | 1863581 | 19.7 | 98.5 | 436 |
| | 413.00 | > 169.00 | 2.758 | 2.733 | 0.025 | 1.000 | 1017744 | | 1.83(0.90-1.10) | 9499 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.758 | 2.733 | 0.025 | | 4434762 | 54.0 | 108 | 26891 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.758 | 2.740 | 0.018 | 1.000 | 2404704 | 21.4 | 112 | 24006 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.132 | 3.108 | 0.024 | 1.000 | 1979272 | 18.7 | 101 | 90859 |
| | 499.00 | > 99.00 | 3.132 | 3.108 | 0.024 | 1.000 | 415063 | | 4.77(0.90-1.10) | 3253 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.132 | 3.108 | 0.024 | 1.000 | 1340178 | 18.9 | 94.7 | 4803 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.132 | 3.108 | 0.024 | | 3474600 | 52.9 | 106 | 20213 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.132 | 3.108 | 0.024 | | 4784968 | 44.2 | 92.5 | 18685 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.486 | 3.457 | 0.029 | 1.000 | 3313537 | 20.7 | 103 | 13030 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.486 | 3.457 | 0.029 | 1.000 | 615766 | 19.4 | 101 | 13863 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.486 | 3.457 | 0.029 | | 8893359 | 48.7 | 97.3 | 19875 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.486 | 3.457 | 0.029 | | 1672846 | 45.8 | 95.7 | 20841 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.495 | 3.467 | 0.028 | 1.000 | 1097093 | 18.2 | 90.8 | 6295 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.495 | 3.467 | 0.028 | | 3081576 | 55.2 | 110 | 10661 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.649 | 3.621 | 0.028 | | 1028883 | 47.3 | 94.7 | 7952 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.649 | 3.631 | 0.018 | 1.000 | 374908 | 20.0 | 100 | 8666 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.805 | 3.778 | 0.027 | 1.000 | 1322123 | 21.2 | 110 | 12687 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.814 | 3.788 | 0.026 | | 1057618 | 48.2 | 96.4 | 3622 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.823 | 3.797 | 0.026 | 1.000 | 979410 | 20.9 | 104 | 1619 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.823 | 3.797 | 0.026 | 1.002 | 362214 | 20.2 | 101 | 4825 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.823 | 3.797 | 0.026 | | 2275371 | 55.9 | 112 | 8618 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.973 | 3.948 | 0.025 | 2288281 | 48.6 | 97.1 | 805 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.981 | 3.957 | 0.023 | 1.000 | 820073 | 19.5 | 97.6 | 5191 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.114 | 4.095 | 0.019 | 1.000 | 911439 | 21.3 | 107 | 874 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.123 | 4.095 | 0.028 | 2300597 | 51.5 | 103 | 4558 | |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.165 | 4.138 | 0.027 | 2373552 | 48.6 | 97.2 | 5298 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.165 | 4.146 | 0.019 | 1.000 | 887102 | 20.2 | 101 | 5413 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.382 | 4.358 | 0.024 | 1.000 | 954573 | 24.4 | 122 | 384 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.626 | 4.596 | 0.030 | 1.000 | 2199009 | 24.9 | 124 | 218 |
| | 713.00 | > 169.00 | 4.616 | 4.596 | 0.020 | 0.998 | 265769 | 8.27(0.00-0.00) | | 4177 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.626 | 4.596 | 0.030 | 5466508 | 67.3 | 135 | 12500 | |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.033 | 5.018 | 0.015 | 3165169 | 76.6 | 153 | 4808 | |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.033 | 5.018 | 0.015 | 1.000 | 1119985 | 30.1 | 150 | 137 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.387 | 5.368 | 0.019 | 1.000 | 1015539 | 28.8 | 144 | 511 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L4_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_031.d

Injection Date: 24-Jul-2017 20:21:37

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

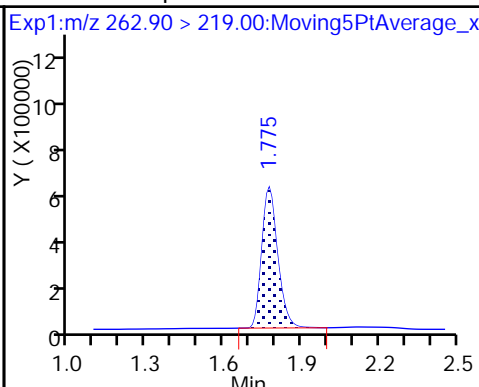
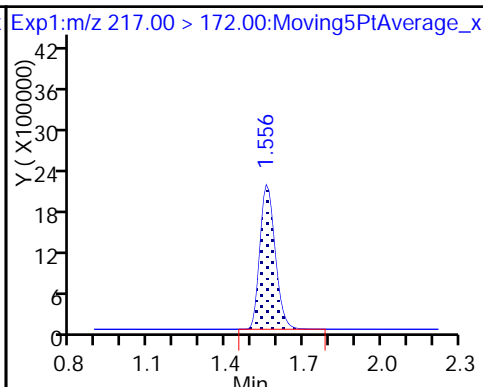
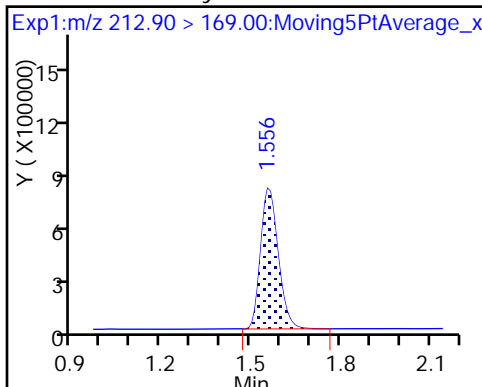
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

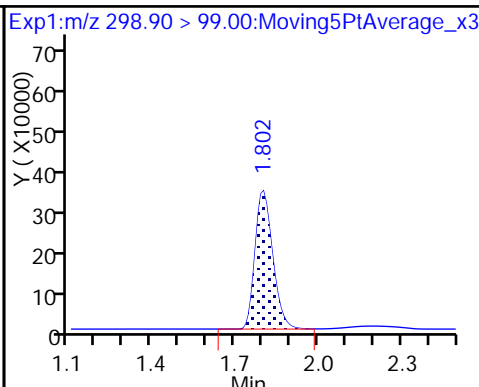
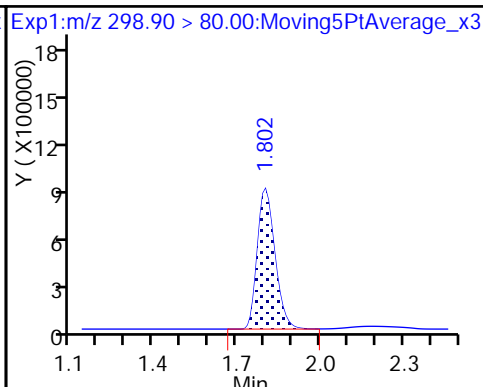
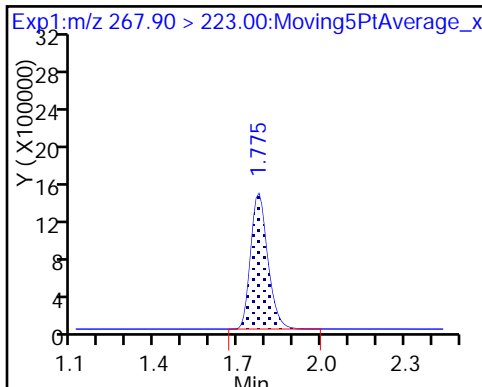
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

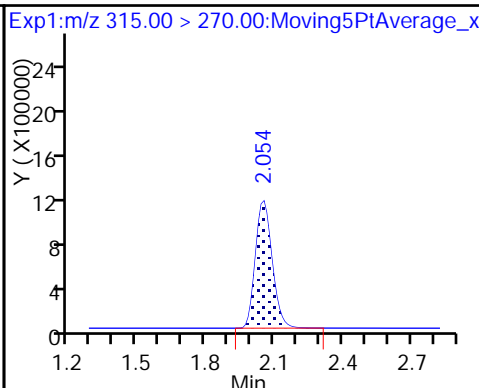
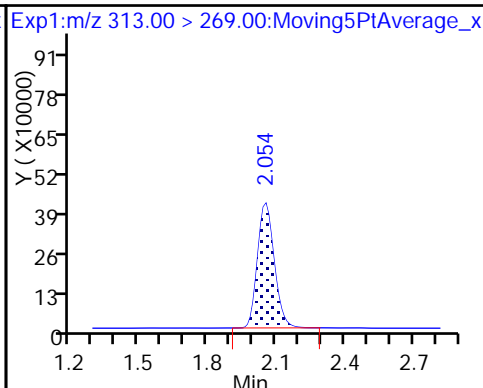
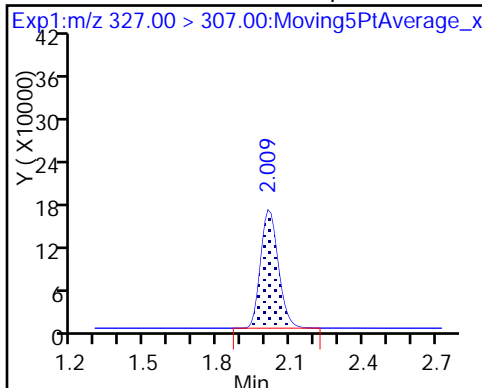
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

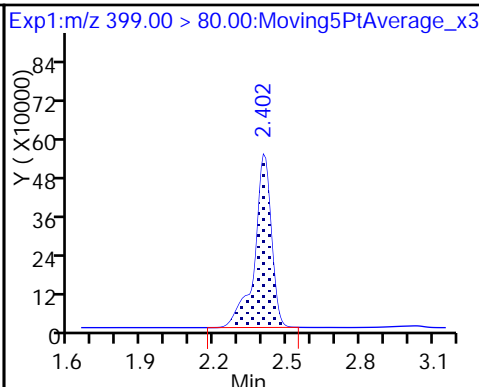
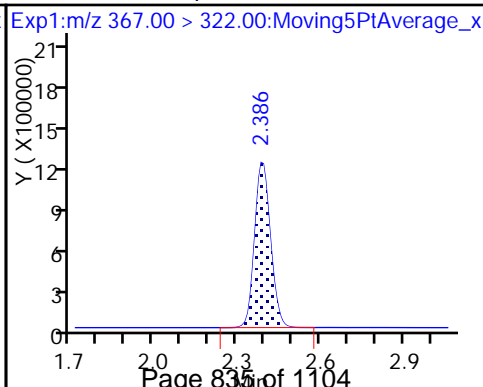
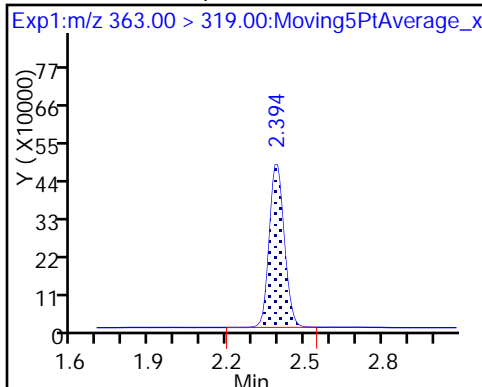
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

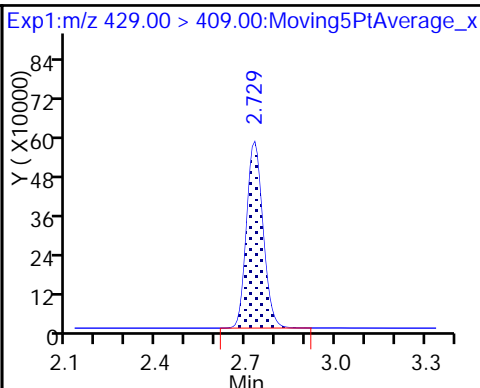
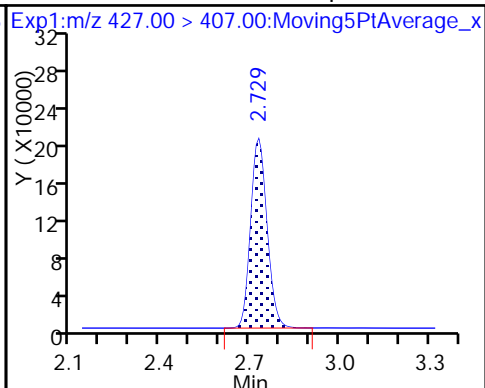
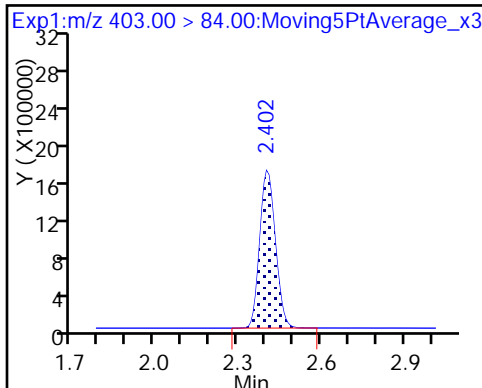
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoic acid

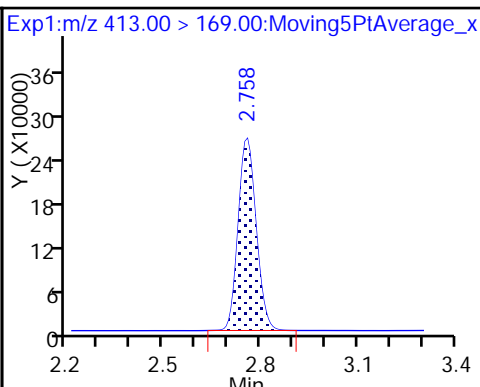
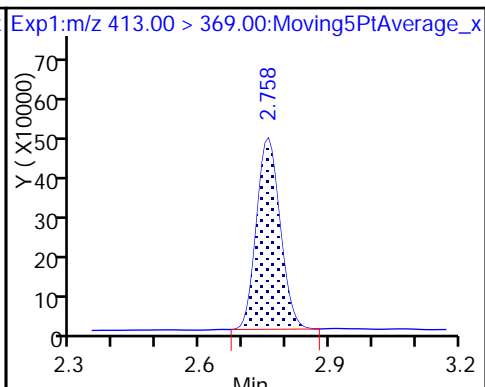
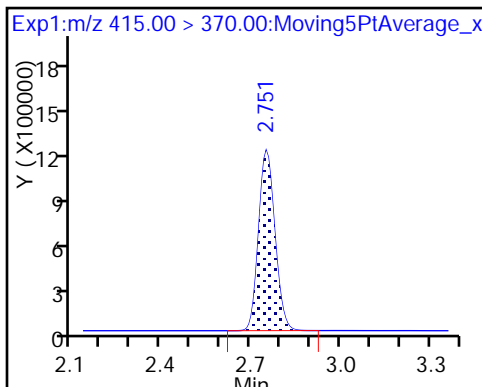
D 12 M2-6:2FTS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

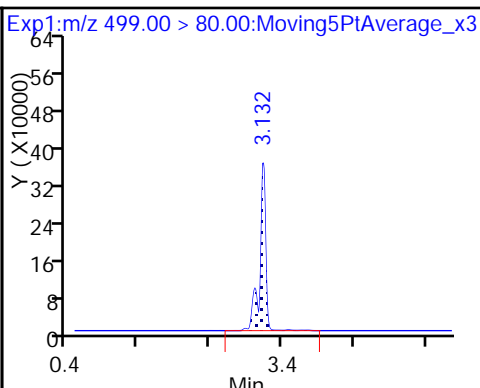
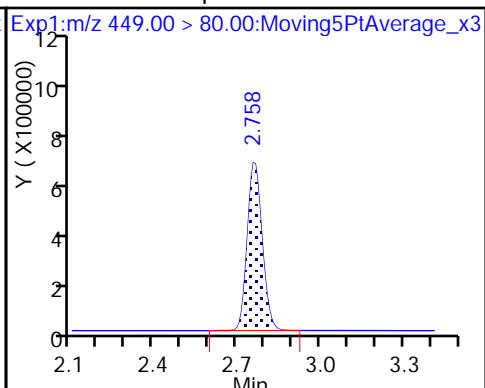
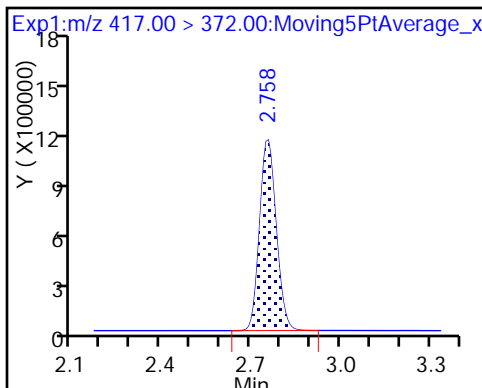
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

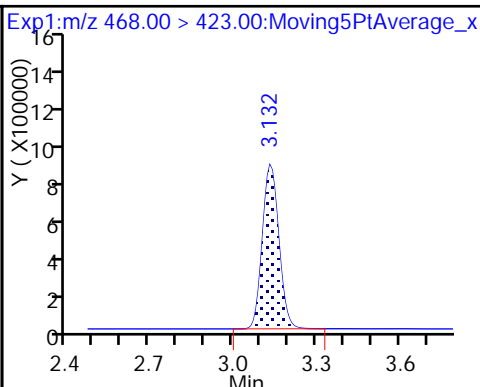
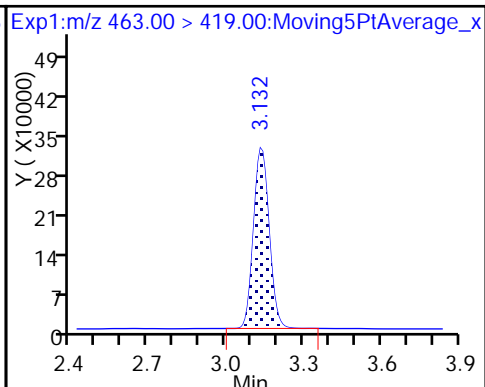
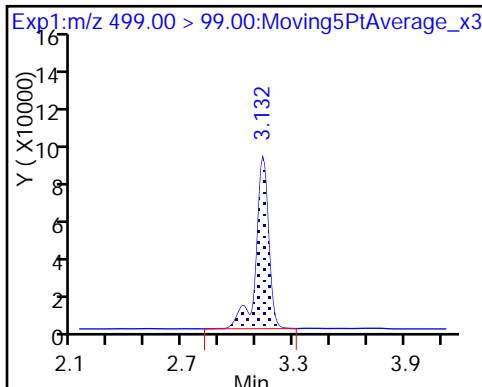
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

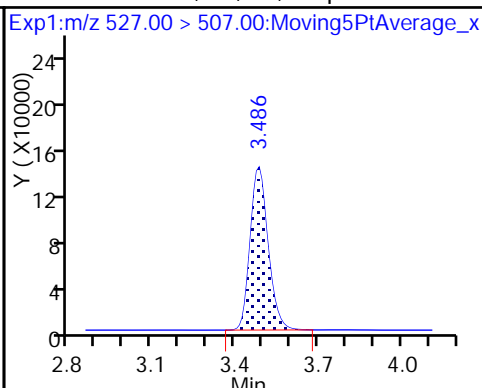
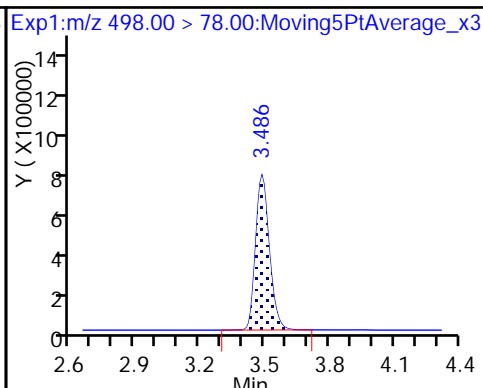
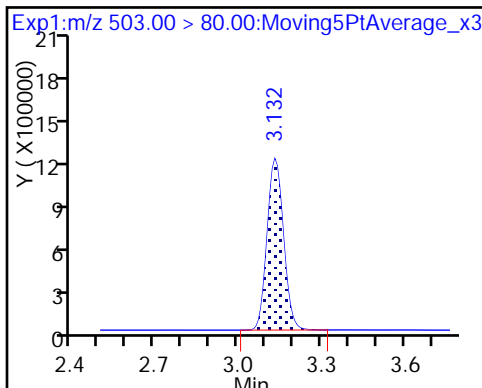
D 19 13C5 PFNA



D 18 13C4 PFOS

22 Perfluorooctane Sulfonamide

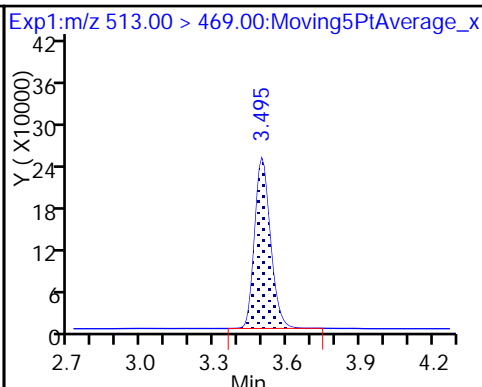
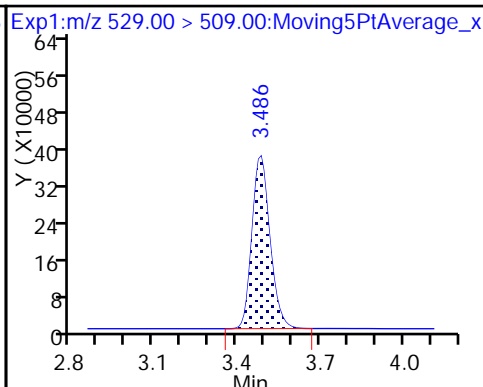
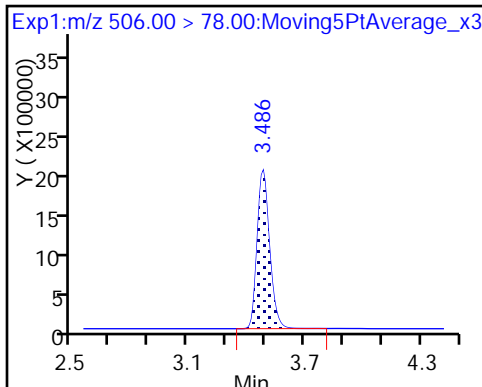
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 21 13C8 FOSA

D 26 M2-8:2FTS

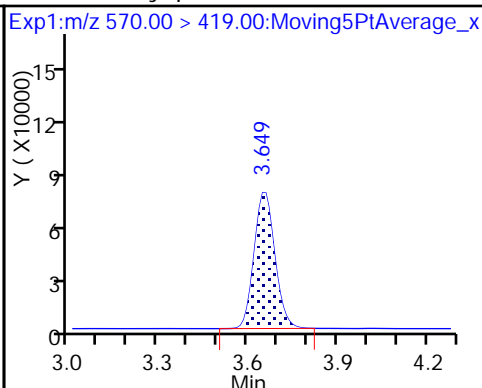
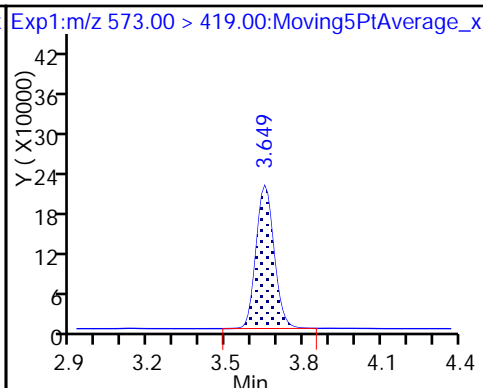
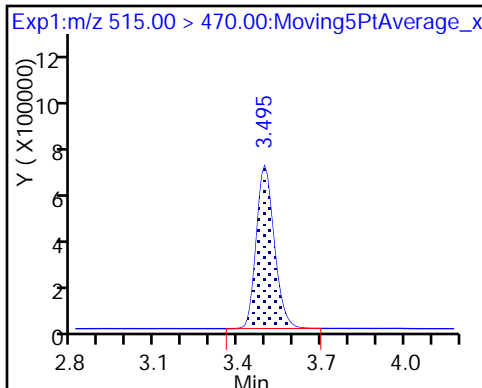
24 Perfluorodecanoic acid



D 23 13C2 PFDA

D 27 d3-NMeFOSAA

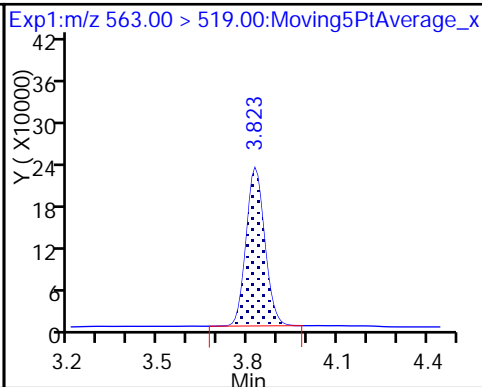
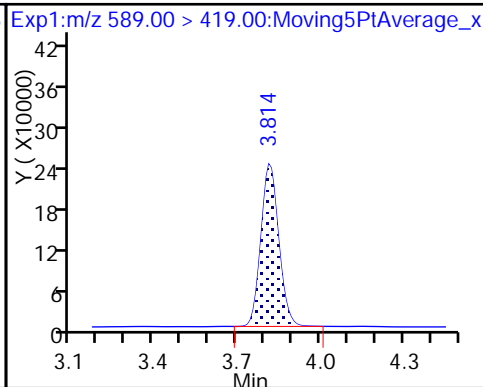
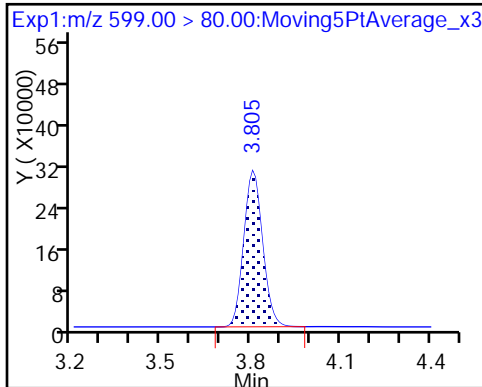
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

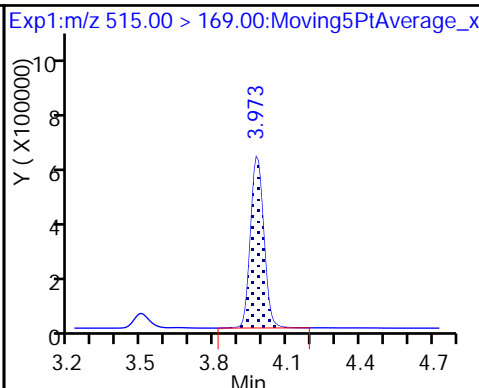
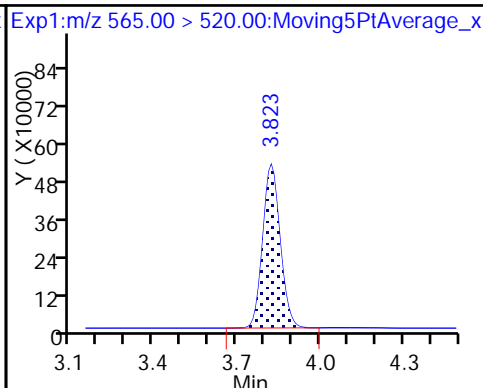
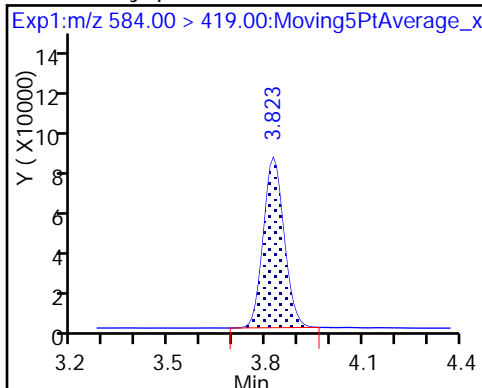
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

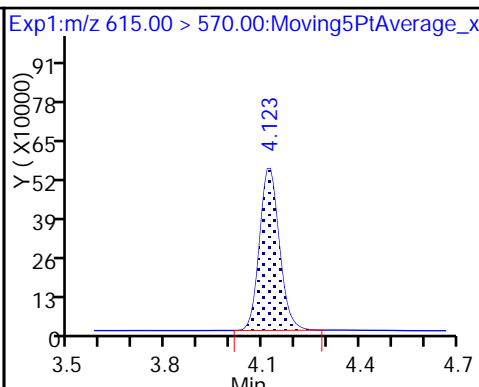
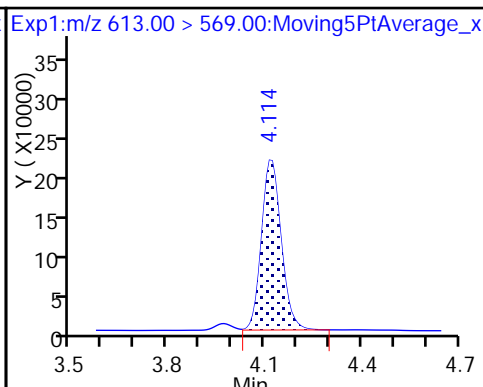
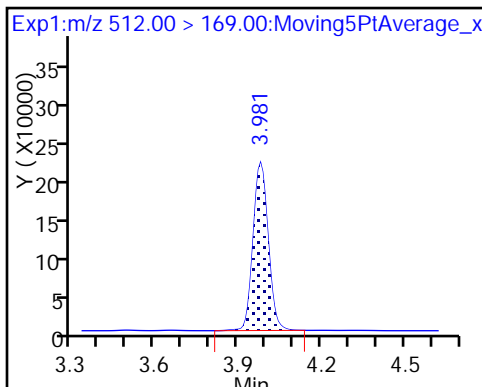
D 34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

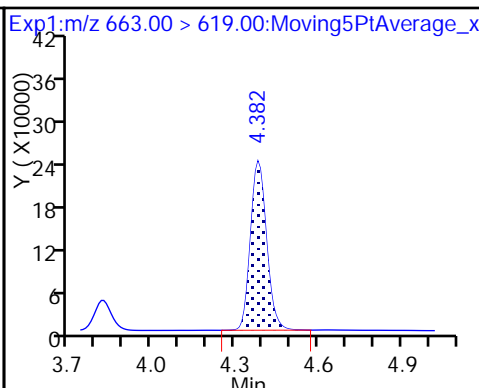
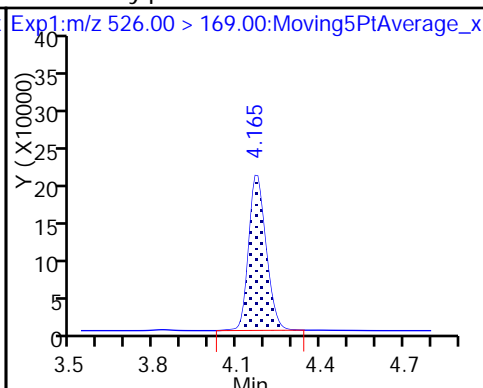
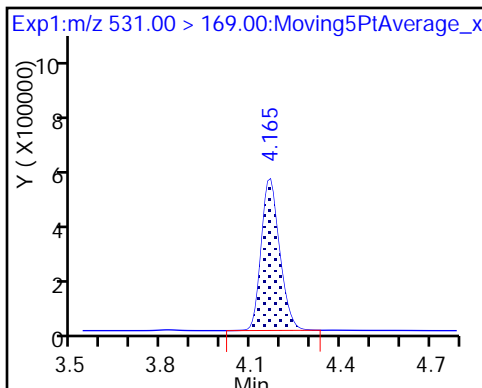
D 36 13C2 PFDaA



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

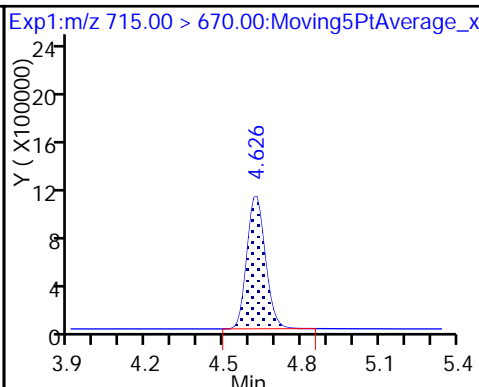
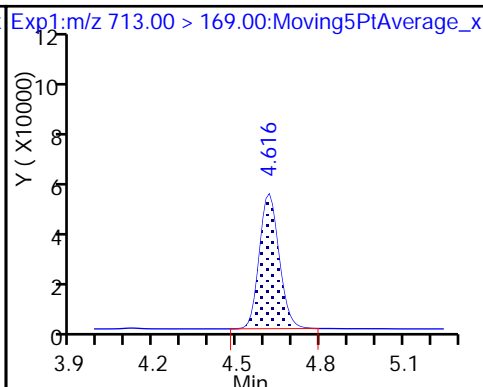
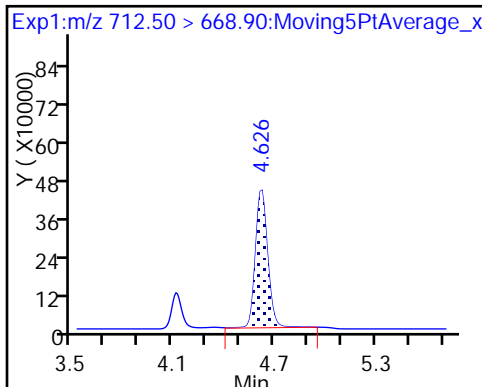
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

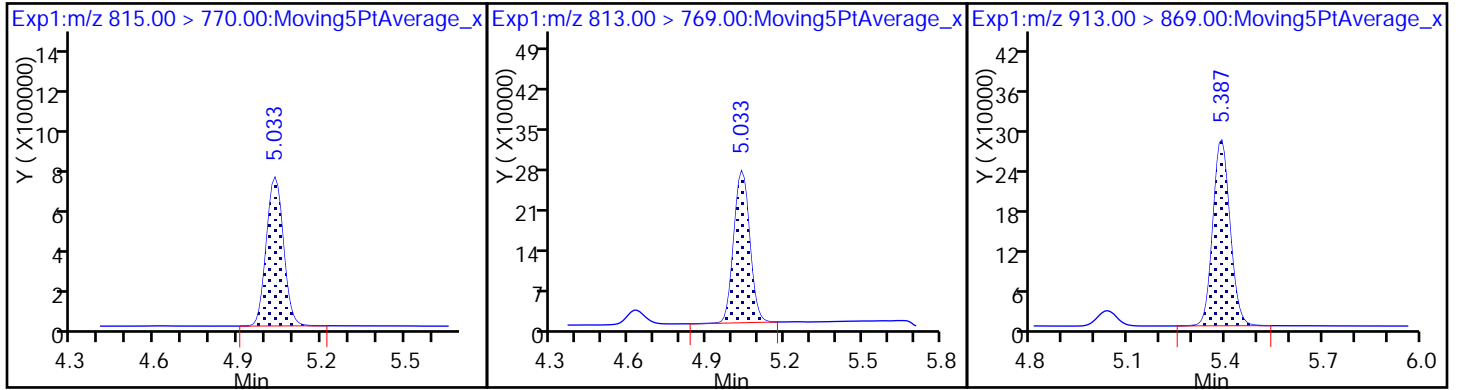
D 43 13C2-PFTeDA



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175762/3 Calibration Date: 07/25/2017 09:27
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25A_003.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9681 | | 1.10 | 1.00 | 9.8 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.119 | | 1.07 | 1.00 | 7.4 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.535 | | 0.911 | 0.884 | 3.1 | 50.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9504 | | 0.998 | 1.00 | -0.2 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.044 | | 1.02 | 1.00 | 1.7 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.224 | | 1.03 | 0.910 | 13.1 | 50.0 |
| 6:2FTS | AveID | 0.8958 | 0.996 | | 1.05 | 0.948 | 11.1 | 50.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.128 | | 1.06 | 1.00 | 5.7 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.116 | | 0.947 | 0.952 | -0.5 | 50.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9433 | | 0.926 | 1.00 | -7.4 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.044 | | 0.916 | 0.928 | -1.3 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.8915 | | 0.989 | 1.00 | -1.1 | 50.0 |
| 8:2FTS | AveID | 0.9107 | 0.9455 | | 0.995 | 0.958 | 3.8 | 50.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9836 | | 1.00 | 1.00 | 0.4 | 50.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9190 | | 1.01 | 1.00 | 1.0 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6370 | | 0.986 | 0.964 | 2.3 | 50.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8198 | | 0.966 | 1.00 | -3.4 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.091 | | 0.958 | 1.00 | -4.2 | 50.0 |
| MeFOSA | AveID | 0.9183 | 0.8995 | | 0.979 | 1.00 | -2.1 | 50.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.8837 | | 0.953 | 1.00 | -4.7 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9726 | | 1.05 | 1.00 | 4.7 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8843 | | 1.04 | 1.00 | 3.9 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.498 | | 1.30 | 1.00 | 30.0 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 1.554 | | 1.30 | 1.00 | 29.7 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.7522 | | 0.983 | 1.00 | -1.7 | 50.0 |
| 13C4 PFBA | Ave | 156025 | 150441 | | 48.2 | 50.0 | -3.6 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 112401 | | 50.9 | 50.0 | 1.7 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 104323 | | 51.6 | 50.0 | 3.1 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 89432 | | 53.3 | 50.0 | 6.7 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 135009 | | 46.5 | 47.3 | -1.8 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 42852 | | 42.8 | 47.5 | -9.9 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175762/3 Calibration Date: 07/25/2017 09:27
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25A_003.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 88017 | | 53.6 | 50.0 | 7.1 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 108099 | | 47.8 | 47.8 | -0.0 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 72808 | | 55.4 | 50.0 | 10.8 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 181464 | | 49.6 | 50.0 | -0.7 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 34031 | | 44.7 | 47.9 | -6.8 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 63109 | | 56.5 | 50.0 | 13.0 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 20921 | | 48.1 | 50.0 | -3.7 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 46713 | | 57.3 | 50.0 | 14.7 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 22474 | | 51.2 | 50.0 | 2.5 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 44961 | | 47.7 | 50.0 | -4.6 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 45113 | | 46.2 | 50.0 | -7.6 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 46192 | | 51.7 | 50.0 | 3.4 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 88642 | | 54.6 | 50.0 | 9.1 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 43303 | | 52.4 | 50.0 | 4.8 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45833.b\2017.07.25A_003.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 25-Jul-2017 09:27:39 ALS Bottle#: 29 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45833.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 25-Jul-2017 10:16:32 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 10:14:59

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.563 | 1.554 | 0.009 | 7522046 | 48.2 | | 96.4 | 42115 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.563 | 1.554 | 0.009 | 145638 | 1.10 | | 110 | 93.1 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.781 | 1.773 | 0.008 | 5620037 | 50.9 | | 102 | 65169 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.791 | 1.773 | 0.018 | 125769 | 1.07 | | 107 | 79.9 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.809 | 1.791 | 0.018 | 137220 | NC | | | 5233 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.809 | 1.800 | 0.009 | 183172 | 0.9111 | | 103 | 247 | |
| | 298.90 > 99.00 | 1.809 | 1.800 | 0.009 | 76796 | | 2.39(0.00-0.00) | | 227 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.028 | 2.006 | 0.022 | 43564 | 1.05 | | 112 | 2914 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.074 | 2.052 | 0.022 | 5216172 | 51.6 | | 103 | 48958 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.074 | 2.052 | 0.022 | 99144 | 1.00 | | 99.8 | 396 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.411 | 2.383 | 0.028 | 93358 | 1.02 | | 102 | 440 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.411 | 2.383 | 0.028 | 4471608 | 53.3 | | 107 | 27861 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.427 | 2.399 | 0.028 | 150373 | 1.03 | | 113 | 409 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.427 | 2.399 | 0.028 | 6385942 | 46.5 | | 98.2 | 29850 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.752 | 2.729 | 0.023 | 2035462 | 42.8 | 90.1 | 34121 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.752 | 2.729 | 0.023 | 1.000 | 40441 | 1.05 | 111 | 2179 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.781 | 2.750 | 0.031 | 4325537 | 50.0 | 100 | 28843 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.781 | 2.750 | 0.031 | 1.000 | 99256 | 1.06 | 106 | 29.0 |
| | 413.00 | > 169.00 | 2.781 | 2.750 | 0.031 | 1.000 | 54258 | 1.83(0.90-1.10) | | 1111 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.781 | 2.750 | 0.031 | 4400829 | 53.6 | 107 | 28645 | |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.788 | 2.758 | 0.030 | 1.000 | 114857 | 0.9473 | 99.5 | 3910 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.167 | 3.132 | 0.035 | 5167131 | 47.8 | 99.9 | 33581 | |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.167 | 3.132 | 0.035 | 3640408 | 55.4 | 111 | 23492 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.167 | 3.132 | 0.035 | 1.000 | 68677 | 0.9265 | 92.6 | 275 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.167 | 3.132 | 0.035 | 1.000 | 104706 | 0.9162 | 98.7 | 1714 |
| | 499.00 | > 99.00 | 3.167 | 3.132 | 0.035 | 1.000 | 25525 | 4.10(0.90-1.10) | | 369 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.468 | 3.462 | 0.006 | 1.000 | 161771 | 0.9885 | 98.9 | 3411 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.468 | 3.462 | 0.006 | 9073197 | 49.6 | 99.3 | 29076 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.523 | 3.482 | 0.041 | 1.000 | 30823 | 0.99 | 104 | 1633 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.523 | 3.482 | 0.041 | 1630077 | 44.7 | 93.2 | 29075 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.533 | 3.491 | 0.042 | 1.000 | 62072 | 1.00 | 100 | 385 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.533 | 3.491 | 0.042 | 3155429 | 56.5 | 113 | 10745 | |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.692 | 3.652 | 0.040 | 1046056 | 48.1 | 96.3 | 10784 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.692 | 3.652 | 0.040 | 1.000 | 19226 | 1.01 | 101 | 832 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.843 | 3.808 | 0.035 | 1.000 | 66375 | 0.9864 | 102 | 2565 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.861 | 3.817 | 0.044 | 1123686 | 51.2 | 102 | 4119 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.861 | 3.827 | 0.034 | 2335643 | 57.3 | 115 | 11296 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.870 | 3.827 | 0.043 | 1.000 | 50947 | 0.9578 | 95.8 | 103 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.870 | 3.827 | 0.043 | 1.002 | 18423 | 0.9658 | 96.6 | 617 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.950 | 3.942 | 0.008 | 2248052 | 47.7 | | 95.4 | 766 | |
| 35 MeFOSA | 512.00 > 169.00 | 3.957 | 3.950 | 0.007 | 1.000 | 40442 | 0.9795 | 97.9 | 1346 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.165 | 4.123 | 0.042 | 2309594 | 51.7 | | 103 | 4950 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.173 | 4.123 | 0.050 | 1.000 | 44928 | 1.05 | 105 | 14.0 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.139 | 4.132 | 0.007 | 2255658 | 46.2 | | 92.4 | 5339 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.148 | 4.140 | 0.008 | 1.000 | 39865 | 0.9529 | 95.3 | 1611 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.447 | 4.393 | 0.054 | 1.000 | 40848 | 1.04 | 104 | 16.3 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.688 | 4.642 | 0.046 | 4432117 | 54.6 | | 109 | 20666 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.688 | 4.642 | 0.046 | 1.000 | 115379 | 1.30 | 130 | 9.4 | |
| | 713.00 > 169.00 | 4.688 | 4.642 | 0.046 | 1.000 | 13169 | 8.76(0.00-0.00) | | 311 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.120 | 5.065 | 0.055 | 2165133 | 52.4 | | 105 | 6172 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.128 | 5.065 | 0.063 | 1.000 | 71783 | 1.30 | 130 | 11.3 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.511 | 5.437 | 0.074 | 1.000 | 34744 | 0.9830 | 98.3 | 21.2 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L2_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45833.b\2017.07.25A_003.d

Injection Date: 25-Jul-2017 09:27:39

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

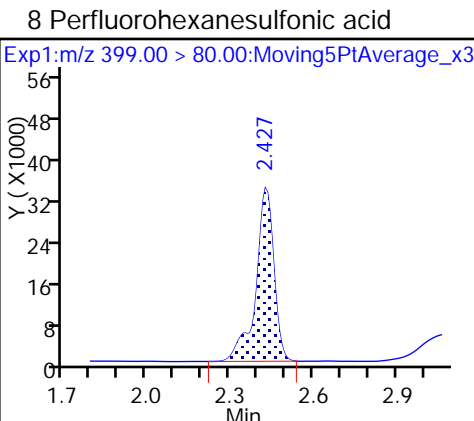
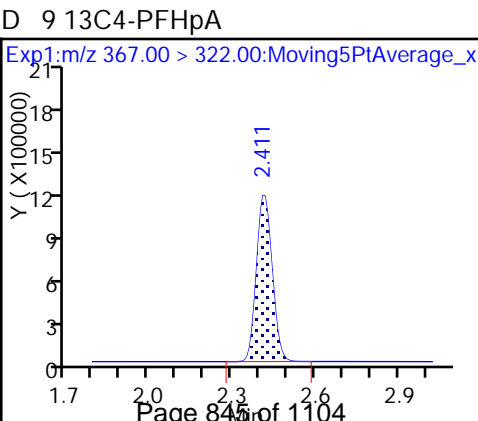
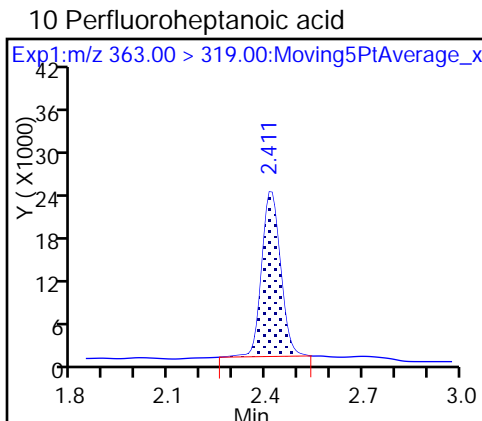
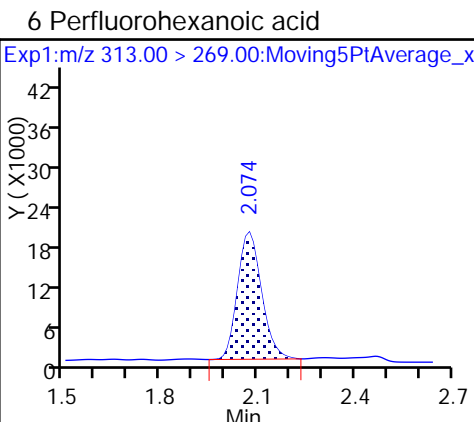
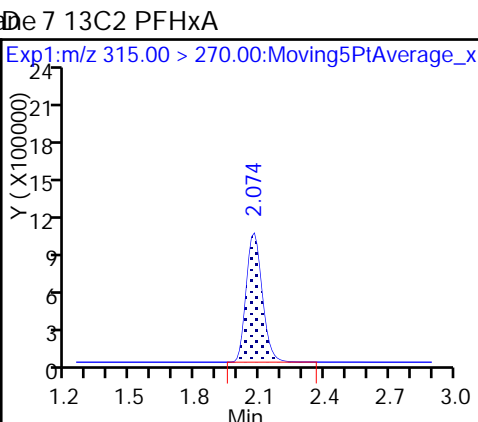
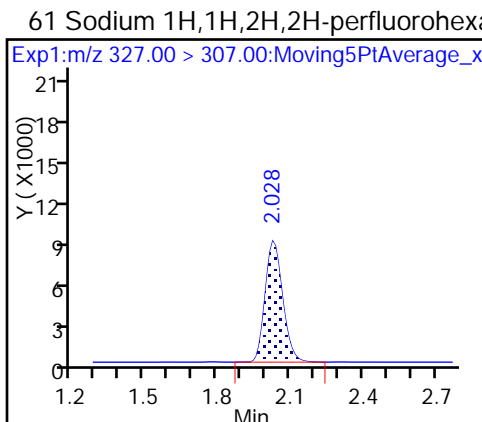
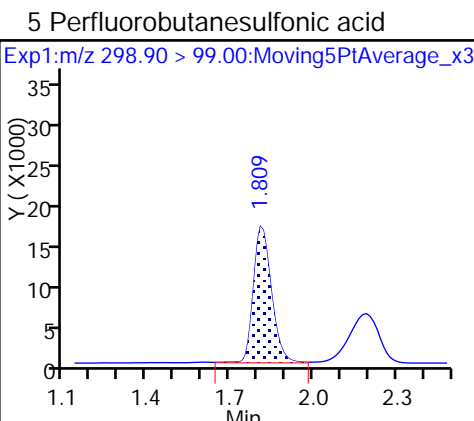
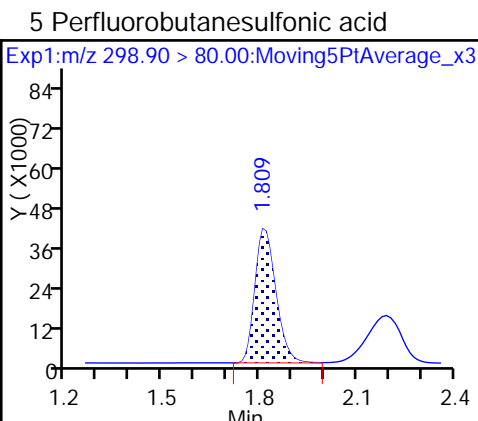
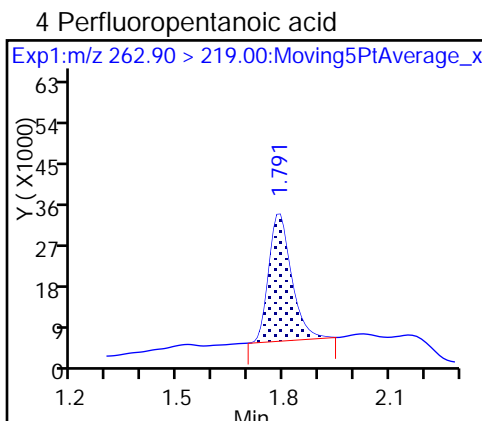
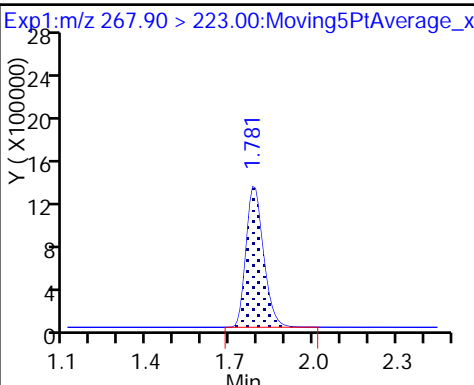
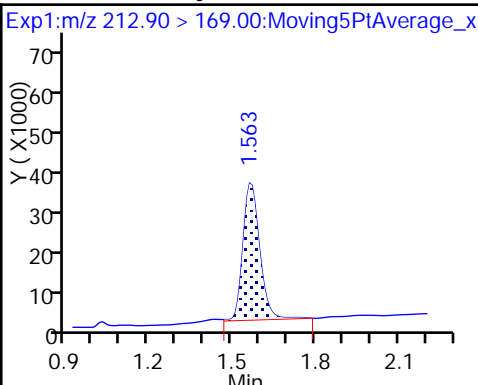
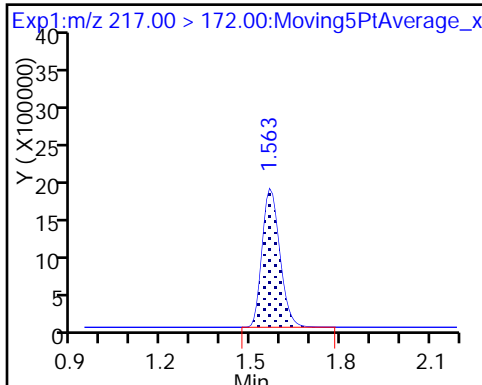
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

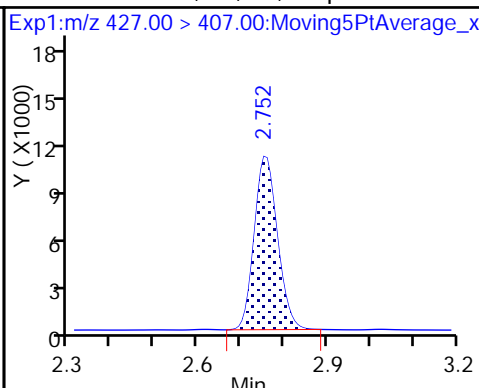
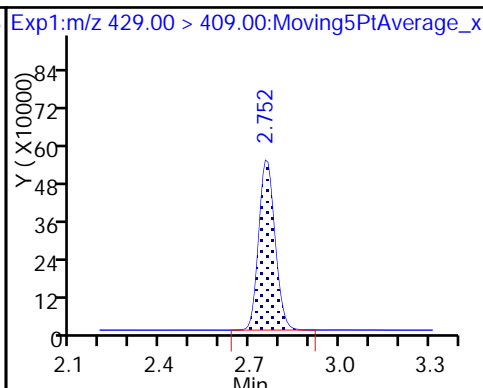
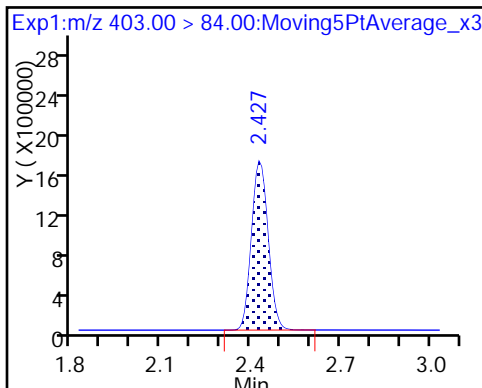
D 3 13C5-PFPeA



D 11 18O2 PFHxS

D 12 M2-6:2FTS

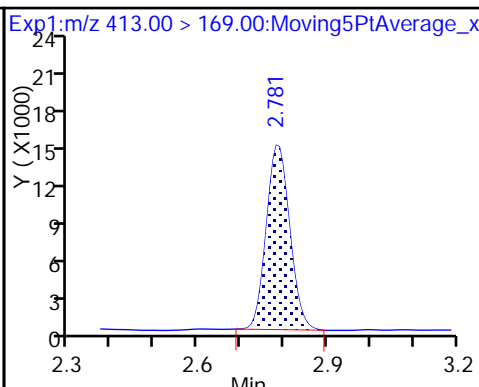
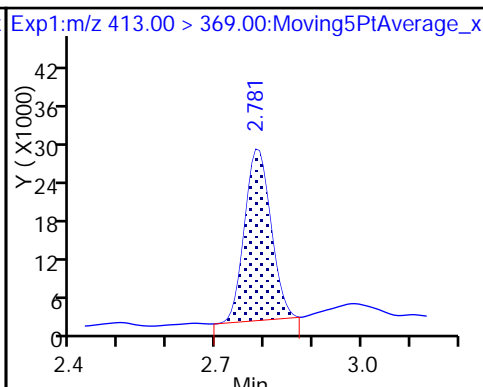
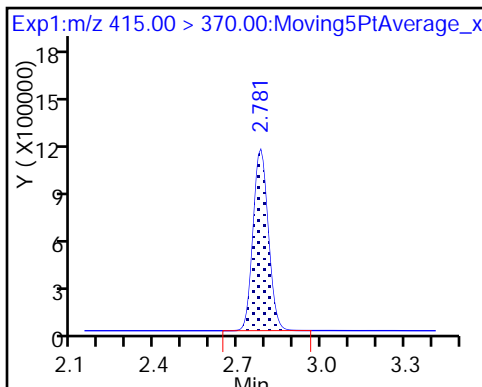
13 Sodium 1H,1H,2H,2H-perfluorooctane



* 62 13C2-PFOA

15 Perfluorooctanoic acid

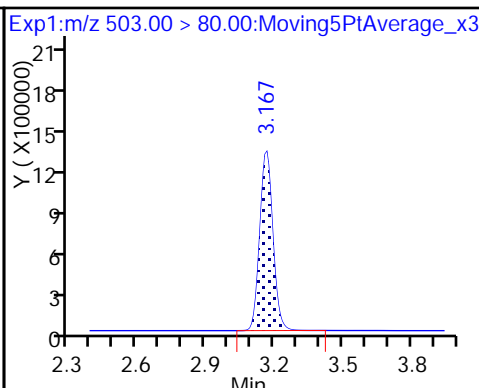
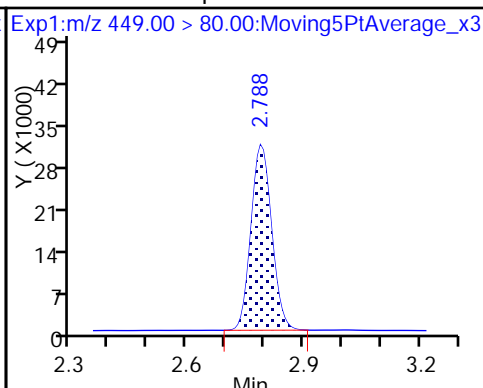
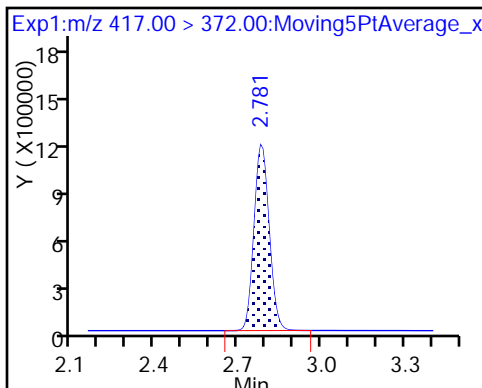
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

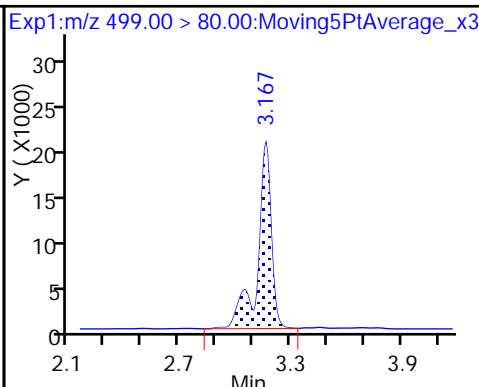
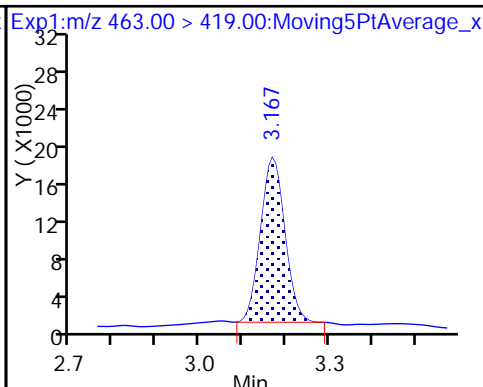
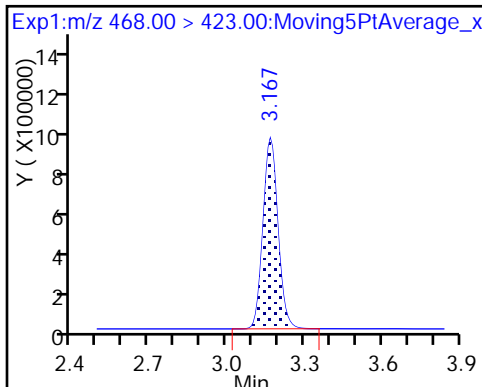
D 18 13C4 PFOS



D 19 13C5 PFNA

20 Perfluorononanoic acid

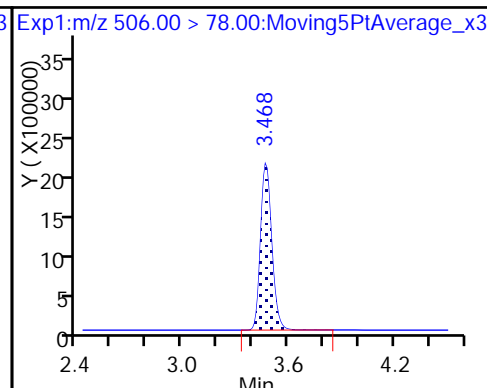
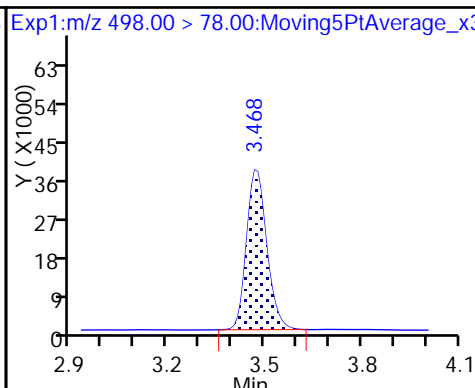
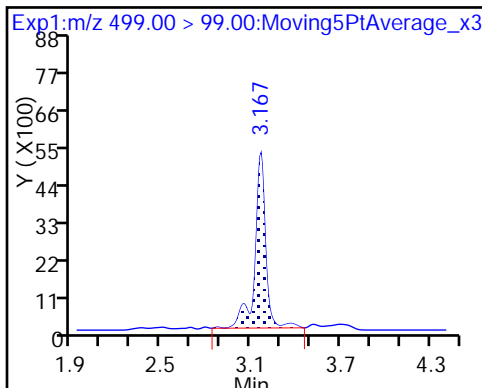
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

22 Perfluorooctane Sulfonamide

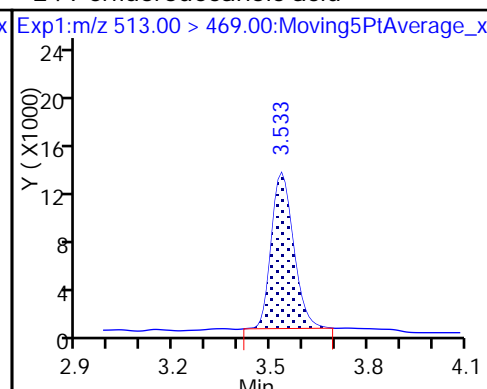
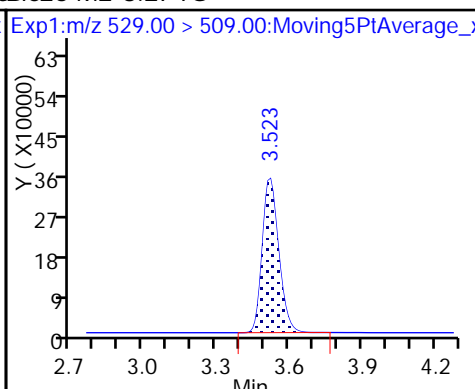
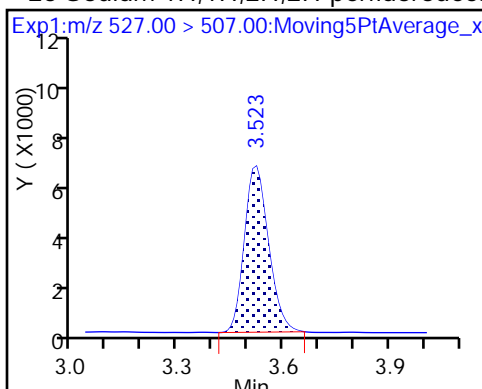
D 21 13C8 FOSA



25 Sodium 1H,1H,2H,2H-perfluorodeca

D 26 M2-8:2FTS

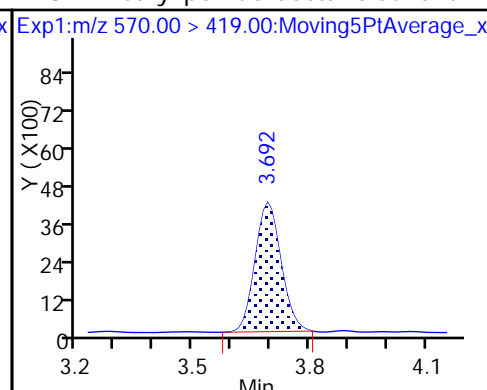
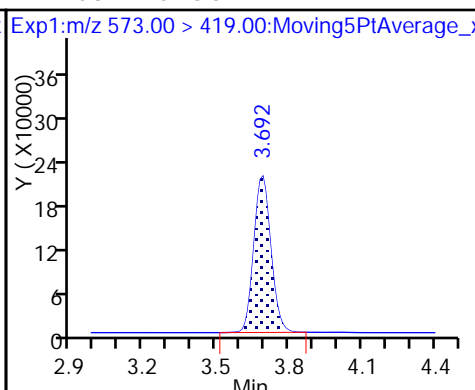
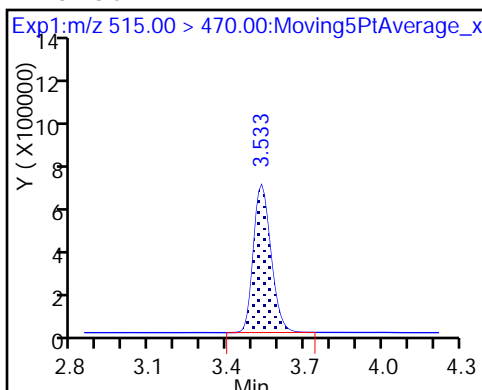
24 Perfluorodecanoic acid



D 23 13C2 PFDA

D 27 d3-NMeFOSAA

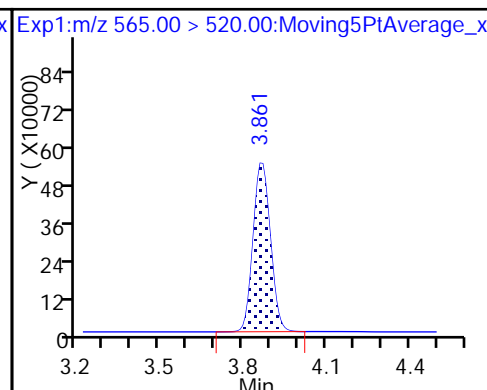
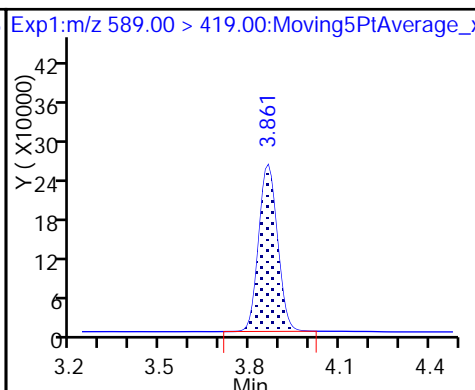
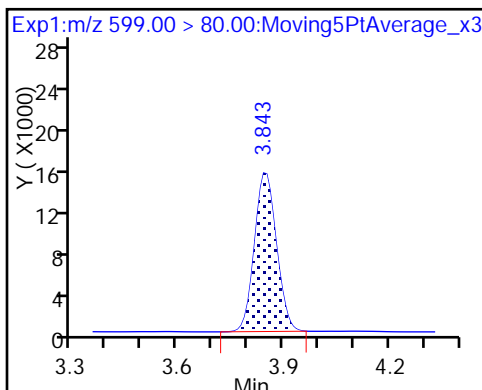
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

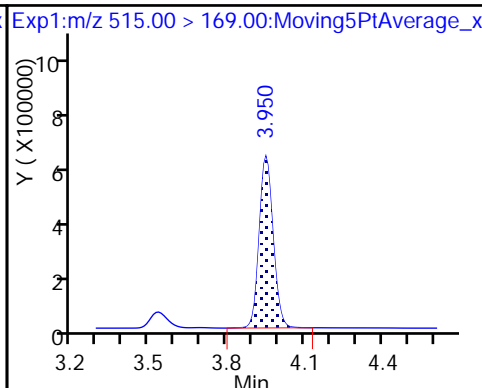
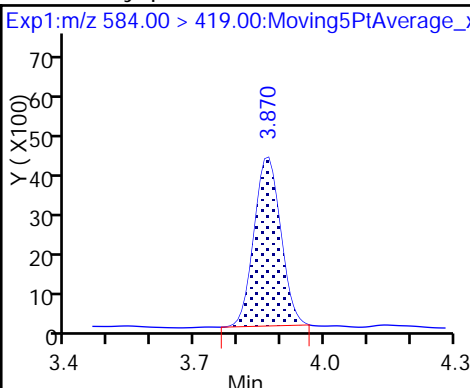
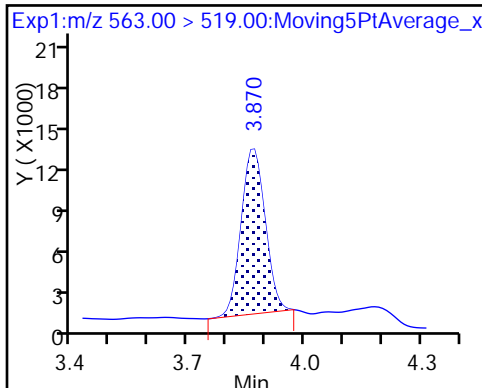
D 30 13C2 PFUnA



31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid D

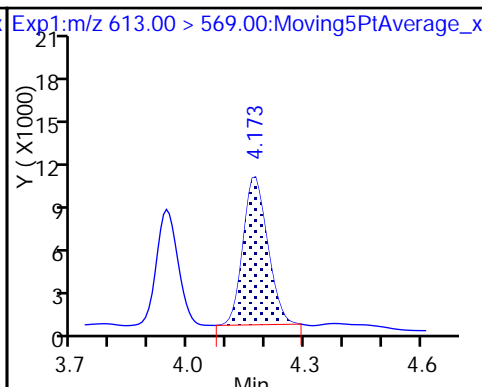
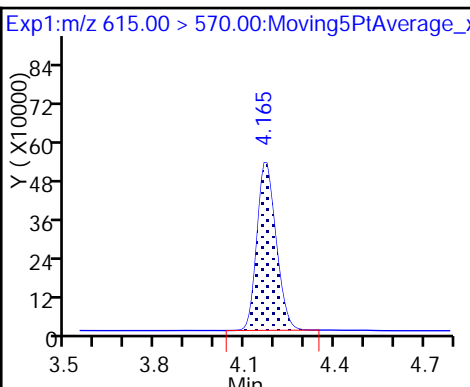
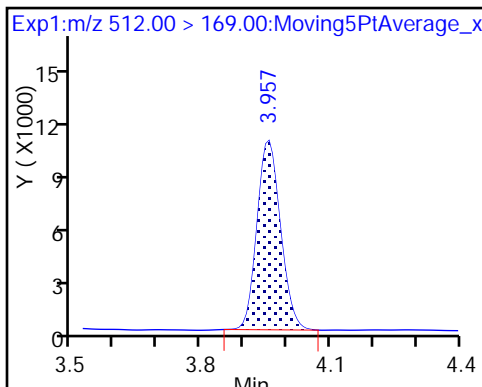
34 d-N-MeFOSA-M



35 MeFOSA

D 36 13C2 PFDaA

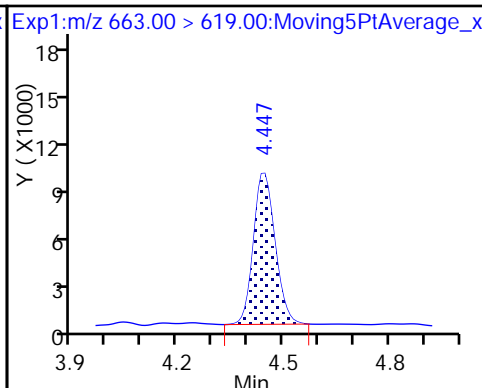
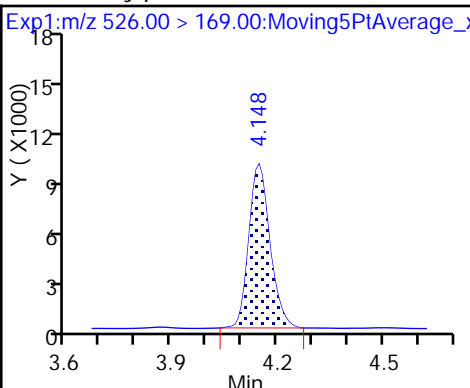
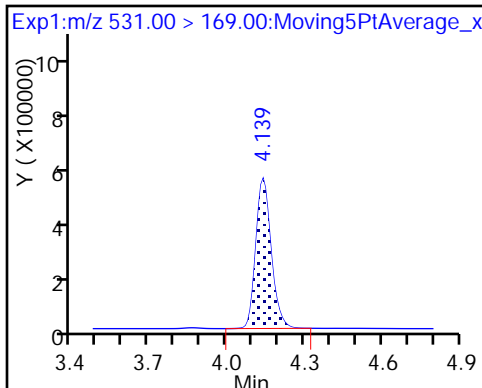
37 Perfluorododecanoic acid



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

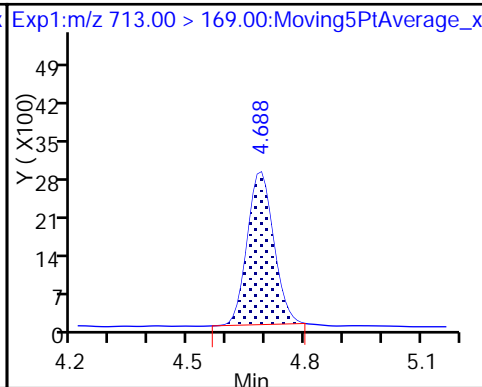
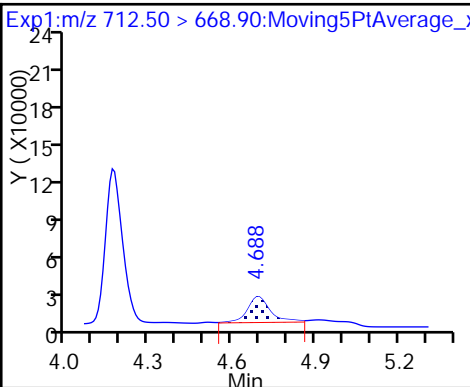
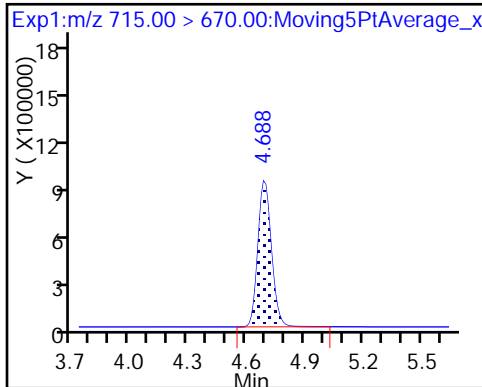
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

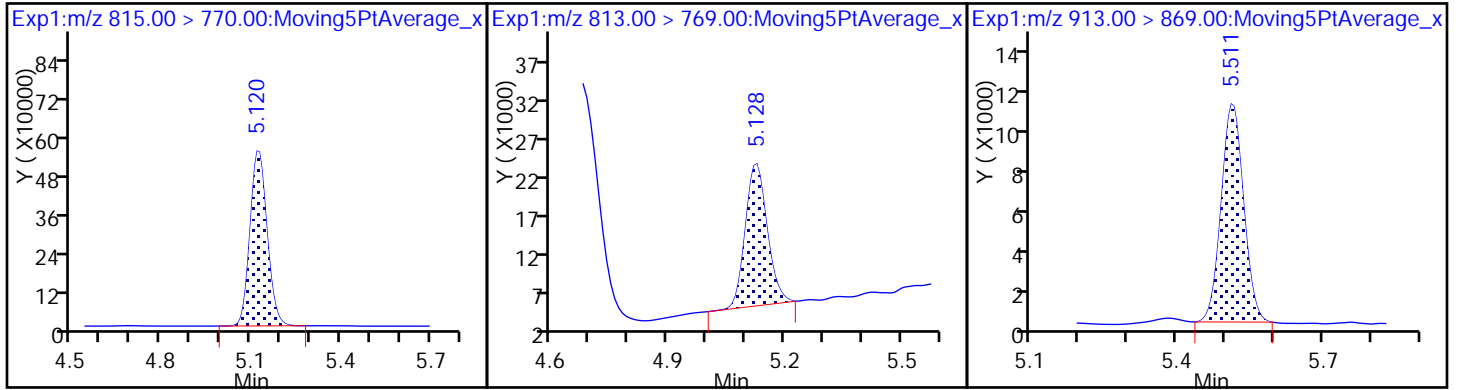
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175951/1 Calibration Date: 07/25/2017 14:10
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25B_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 1.032 | | 23.4 | 20.0 | 17.0 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.052 | | 20.2 | 20.0 | 1.0 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.537 | | 18.2 | 17.7 | 3.2 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9547 | | 20.1 | 20.0 | 0.3 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.005 | | 19.6 | 20.0 | -2.1 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.021 | | 17.2 | 18.2 | -5.6 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8787 | | 18.6 | 19.0 | -1.9 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.024 | | 19.2 | 20.0 | -4.0 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.189 | | 20.2 | 19.0 | 6.0 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9903 | | 19.5 | 20.0 | -2.7 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.070 | | 18.8 | 18.6 | 1.2 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9275 | | 19.5 | 19.2 | 1.9 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9007 | | 20.0 | 20.0 | -0.1 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9232 | | 18.8 | 20.0 | -5.8 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.8955 | | 19.7 | 20.0 | -1.6 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6495 | | 20.1 | 19.3 | 4.3 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8798 | | 20.7 | 20.0 | 3.7 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.027 | | 19.9 | 20.0 | -0.4 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.9266 | | 20.2 | 20.0 | 0.9 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9665 | | 20.8 | 20.0 | 4.0 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9108 | | 19.6 | 20.0 | -1.8 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8304 | | 19.5 | 20.0 | -2.5 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.048 | | 21.3 | 20.0 | 6.6 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.9091 | | 22.3 | 20.0 | 11.5 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8119 | | 21.2 | 20.0 | 6.1 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 160885 | | 51.6 | 50.0 | 3.1 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 115508 | | 52.3 | 50.0 | 4.5 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 110279 | | 54.5 | 50.0 | 9.0 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 97166 | | 58.0 | 50.0 | 15.9 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 149216 | | 51.4 | 47.3 | 8.6 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 45868 | | 45.8 | 47.5 | -3.6 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175951/1 Calibration Date: 07/25/2017 14:10
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25B_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 91461 | | 55.7 | 50.0 | 11.3 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 108341 | | 47.9 | 47.8 | 0.1 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 71588 | | 54.4 | 50.0 | 8.9 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 34518 | | 45.3 | 47.9 | -5.4 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 184132 | | 50.4 | 50.0 | 0.7 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 61094 | | 54.7 | 50.0 | 9.4 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 21835 | | 50.2 | 50.0 | 0.5 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 45084 | | 55.3 | 50.0 | 10.7 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 22089 | | 50.4 | 50.0 | 0.7 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 45309 | | 48.1 | 50.0 | -3.8 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 44365 | | 49.7 | 50.0 | -0.6 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 46316 | | 47.4 | 50.0 | -5.2 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 87004 | | 53.6 | 50.0 | 7.1 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 44771 | | 54.2 | 50.0 | 8.4 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_001.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 25-Jul-2017 14:10:47 ALS Bottle#: 31 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.547 | 1.559 | -0.012 | 8044257 | 51.6 | | 103 | 28574 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.547 | 1.559 | -0.012 | 3321390 | 23.4 | | 117 | 1693 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.757 | 1.778 | -0.021 | 5775398 | 52.3 | | 105 | 48022 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.757 | 1.778 | -0.021 | 2430970 | 20.2 | | 101 | 1266 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.784 | 1.797 | -0.013 | 149732 | NC | | | 5825 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.784 | 1.806 | -0.022 | 4053523 | 18.2 | | 103 | 2524 | |
| | 298.90 > 99.00 | 1.784 | 1.806 | -0.022 | 1584492 | | 2.56(0.00-0.00) | | 2371 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.998 | 2.013 | -0.015 | 807461 | 18.1 | | 97.0 | 31823 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.032 | 2.058 | -0.026 | 5513972 | 54.5 | | 109 | 31525 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.032 | 2.058 | -0.026 | 2105733 | 20.1 | | 100 | 5117 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.363 | 2.393 | -0.030 | 4858314 | 58.0 | | 116 | 25493 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.363 | 2.393 | -0.030 | 1952106 | 19.6 | | 97.9 | 7649 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.380 | 2.409 | -0.029 | 7057915 | 51.4 | | 109 | 24943 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.380 | 2.409 | -0.029 | 2772736 | 17.2 | | 94.4 | 2346 | |
| D 12 M2-6:2FTS | 429.00 > 409.00 | 2.700 | 2.727 | -0.027 | 2178738 | 45.8 | | 96.4 | 29414 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|-------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.700 | 2.734 | -0.034 | 1.000 | 764177 | 18.6 | 98.1 | 18751 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.729 | 2.756 | -0.027 | | 4573055 | 55.7 | 111 | 25168 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.722 | 2.756 | -0.034 | | 4479144 | 50.0 | 100 | 25759 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.729 | 2.756 | -0.027 | 1.000 | 1873611 | 19.2 | 96.0 | 402 |
| | 413.00 | > 169.00 | 2.729 | 2.756 | -0.027 | 1.000 | 1073308 | | 1.75(0.90-1.10) | 7639 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.737 | 2.763 | -0.026 | 1.000 | 2452485 | 20.2 | 106 | 22520 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.107 | 3.131 | -0.024 | 1.000 | 2151402 | 18.8 | 101 | 74821 |
| | 499.00 | > 99.00 | 3.098 | 3.131 | -0.033 | 0.997 | 453284 | | 4.75(0.90-1.10) | 2967 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.107 | 3.131 | -0.024 | | 3579400 | 54.4 | 109 | 16383 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.098 | 3.131 | -0.033 | | 5178708 | 47.9 | 100 | 18851 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.107 | 3.140 | -0.033 | 1.000 | 1417797 | 19.5 | 97.3 | 3516 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.455 | 3.487 | -0.032 | | 9206615 | 50.4 | 101 | 11945 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.446 | 3.487 | -0.041 | | 1653392 | 45.3 | 94.6 | 15233 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.455 | 3.487 | -0.032 | 1.003 | 613420 | 19.5 | 102 | 10849 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.464 | 3.497 | -0.033 | | 3054698 | 54.7 | 109 | 8433 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.455 | 3.497 | -0.042 | 1.000 | 3317010 | 20.0 | 99.9 | 9959 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.464 | 3.497 | -0.033 | 1.000 | 1128054 | 18.8 | 94.2 | 5935 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.622 | 3.646 | -0.024 | | 1091736 | 50.2 | 100 | 5805 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.622 | 3.657 | -0.035 | 1.000 | 391065 | 19.7 | 98.4 | 5118 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.778 | 3.803 | -0.025 | 1.000 | 1356724 | 20.1 | 104 | 8703 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.788 | 3.822 | -0.034 | | 1104449 | 50.4 | 101 | 2679 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.798 | 3.822 | -0.024 | 1.000 | 925976 | 19.9 | 99.6 | 1545 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.788 | 3.822 | -0.034 | 1.000 | 388680 | 20.7 | 104 | 4300 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.788 | 3.822 | -0.034 | | 2254207 | 55.3 | 111 | 6627 |
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.951 | 3.979 | -0.028 | | 2265432 | 48.1 | 96.2 | 685 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| 35 MeFOSA | 512.00 > 169.00 | 3.951 | 3.987 | -0.036 | 1.000 | 839633 | 20.2 | 101 | 4984 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.087 | 4.116 | -0.029 | 1.000 | 857552 | 20.8 | 104 | 926 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.087 | 4.116 | -0.029 | | 2218241 | 49.7 | 99.4 | 4411 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.138 | 4.167 | -0.029 | | 2315782 | 47.4 | 94.8 | 5134 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.146 | 4.175 | -0.029 | 1.000 | 843711 | 19.6 | 98.2 | 4977 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.356 | 4.380 | -0.024 | 1.000 | 736797 | 19.5 | 97.5 | 276 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.593 | 4.614 | -0.021 | 1.000 | 1817134 | 21.3 | 107 | 137 | |
| | 713.00 > 169.00 | 4.582 | 4.614 | -0.032 | 0.998 | 218009 | | 8.34(0.00-0.00) | 2960 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.593 | 4.614 | -0.021 | | 4350200 | 53.6 | 107 | 25329 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.011 | 5.025 | -0.014 | 1.000 | 806644 | 22.3 | 112 | 118 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.011 | 5.025 | -0.014 | | 2238556 | 54.2 | 108 | 3516 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.364 | 5.383 | -0.019 | 1.000 | 720420 | 21.2 | 106 | 358 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULLL-L4_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_001.d

Injection Date: 25-Jul-2017 14:10:47

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

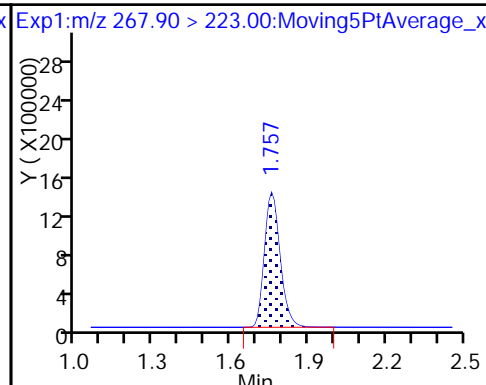
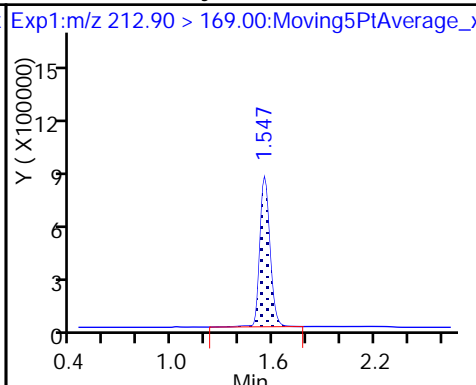
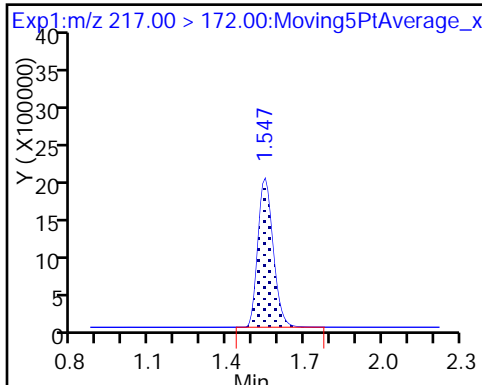
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

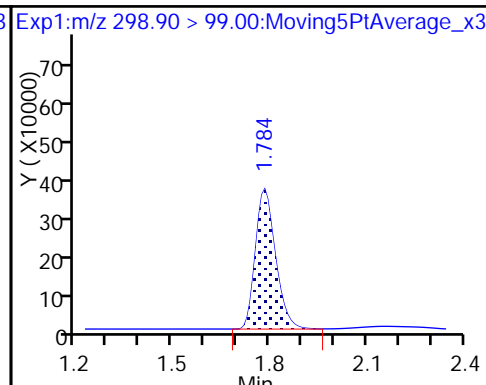
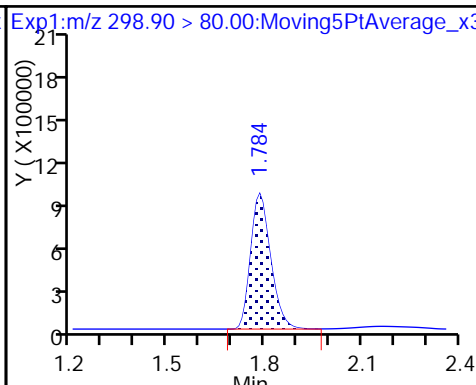
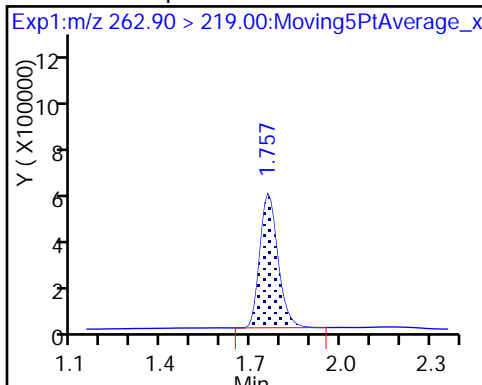
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

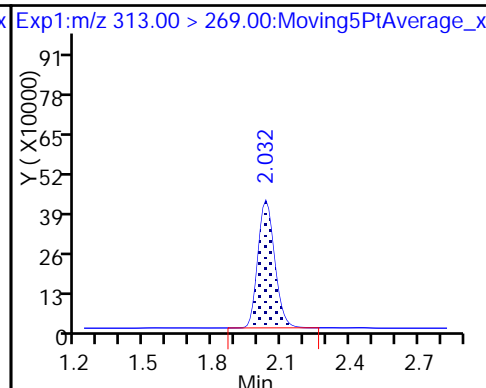
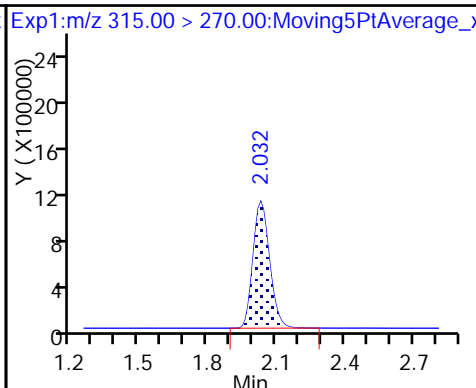
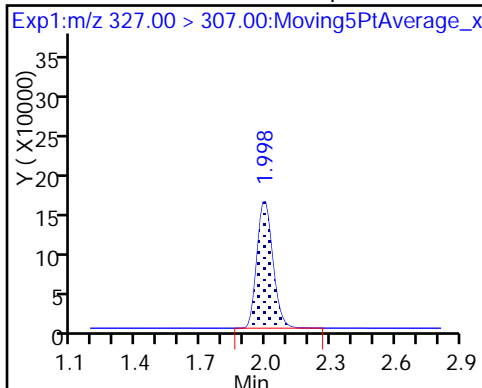
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

De 7 13C2 PFHxA

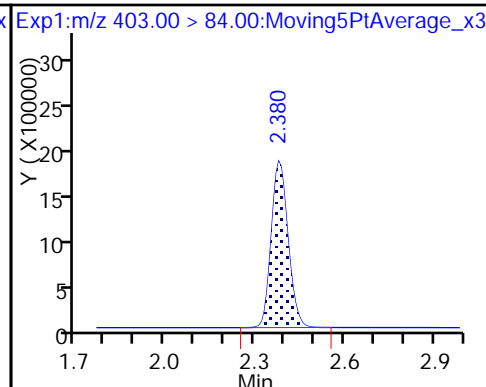
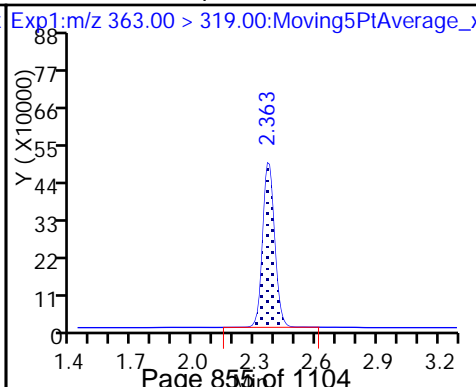
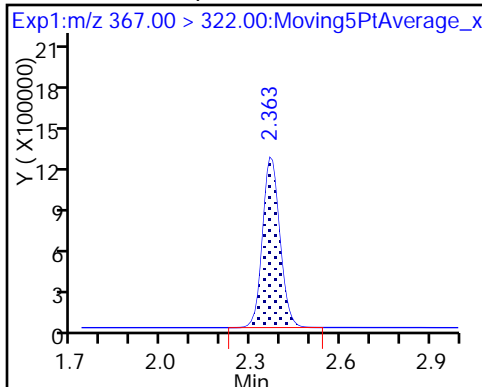
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

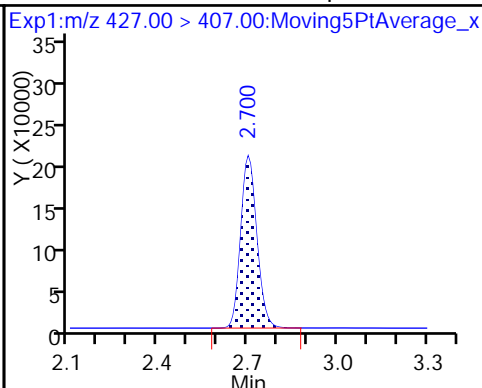
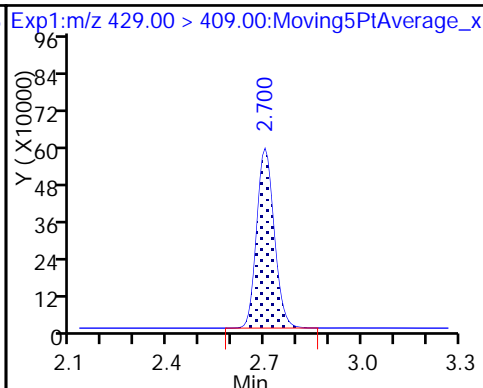
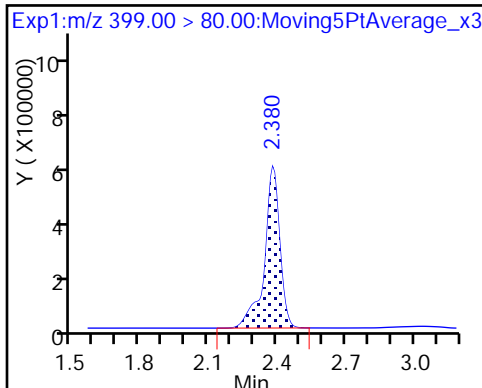
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

D 12 M2-6:2F5

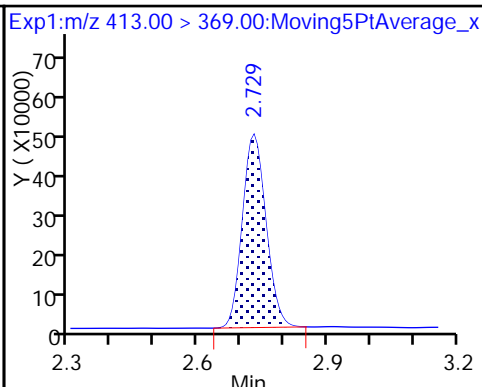
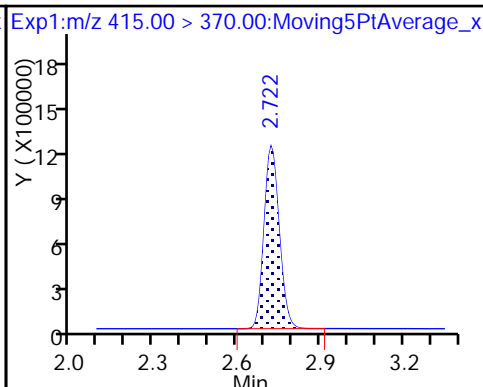
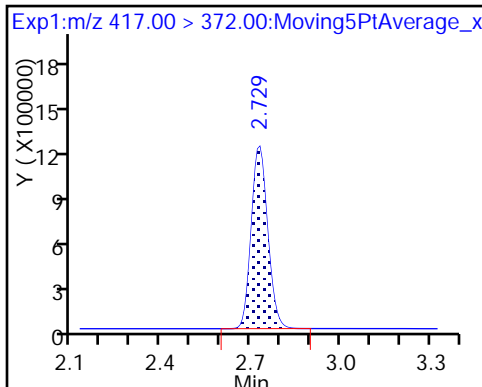
13 Sodium 1H,1H,2H,2H-perfluorooctane



D 14 13C4 PFOA

* 62 13C2-PFOA

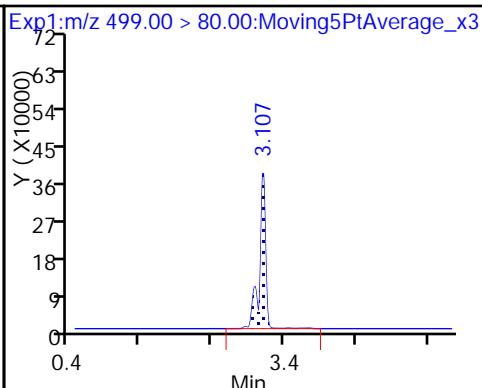
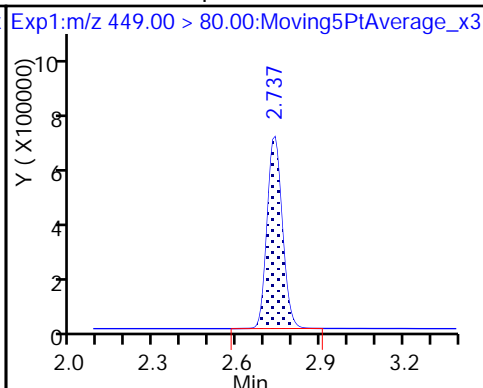
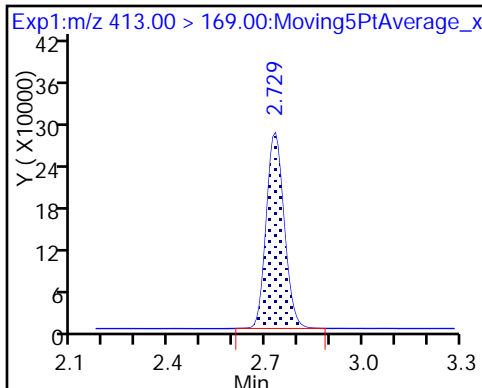
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

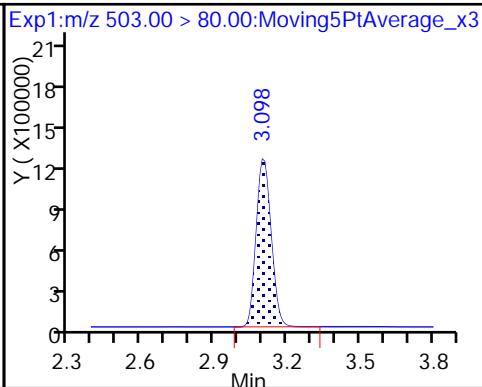
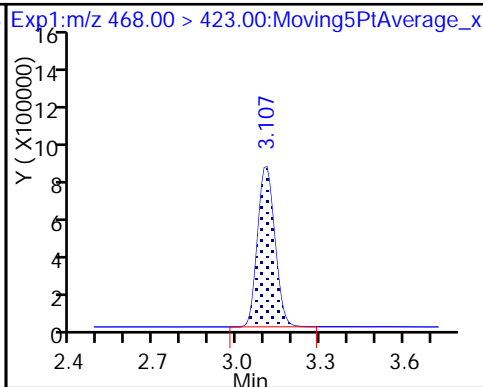
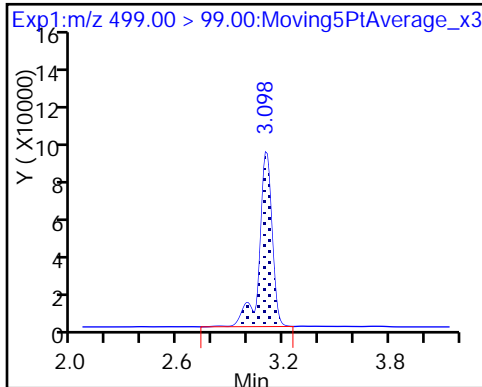
17 Perfluorooctane sulfonic acid

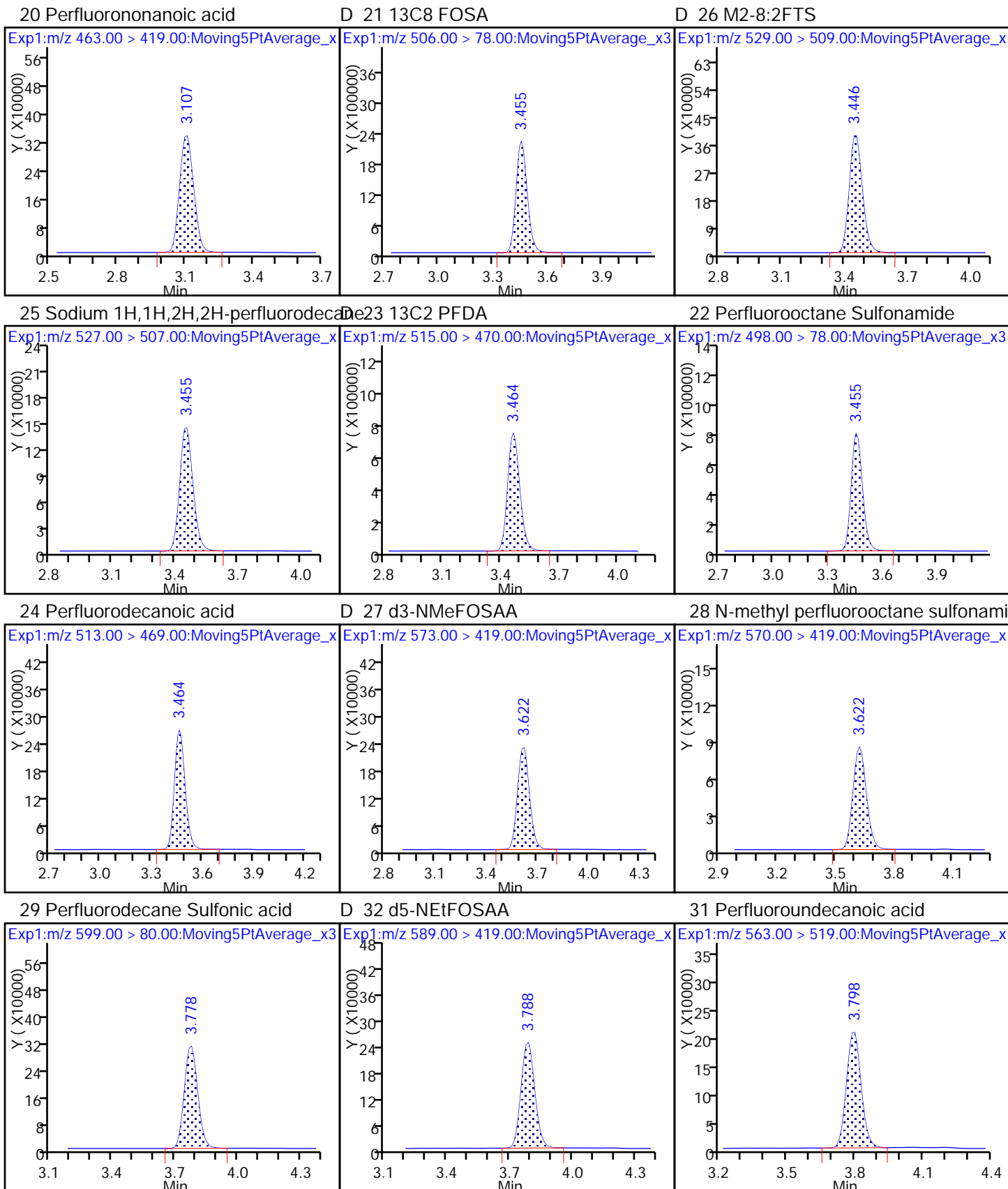


17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

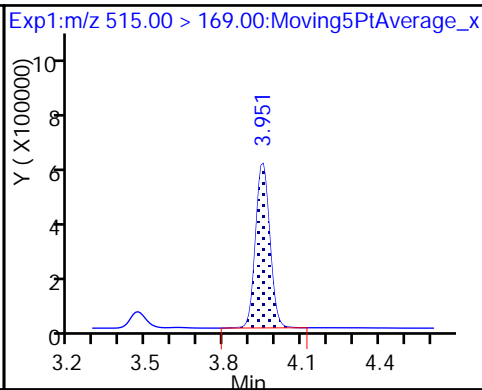
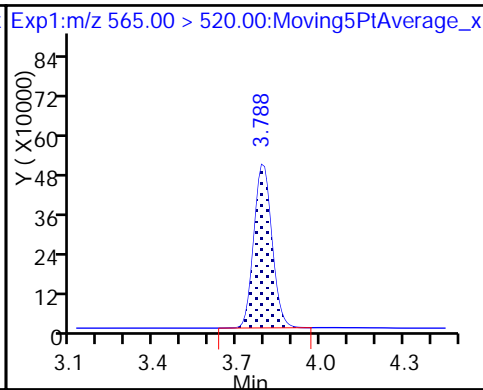
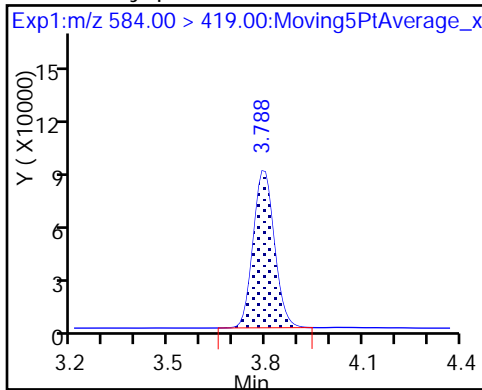
D 18 13C4 PFOS





33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUa

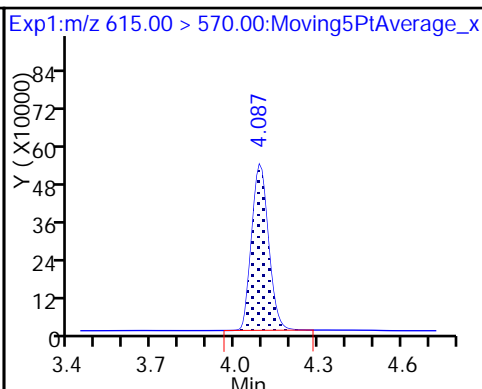
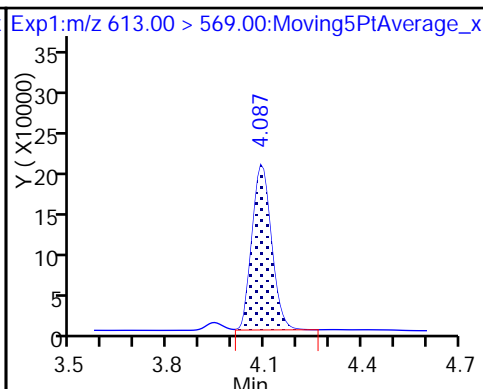
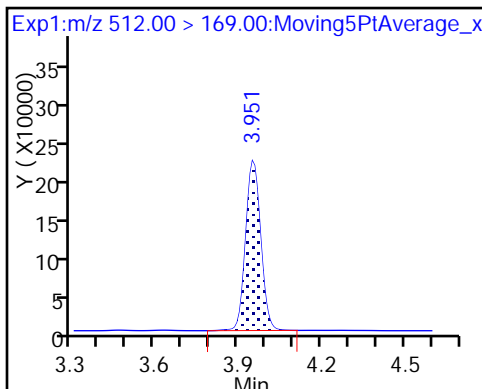
D 34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

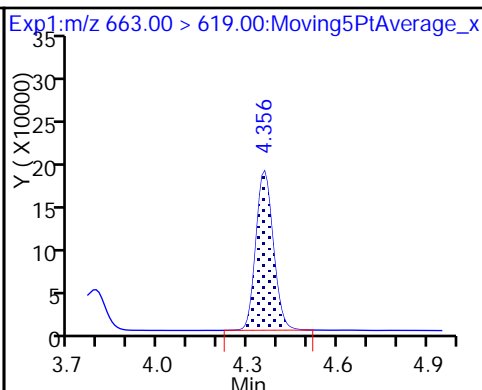
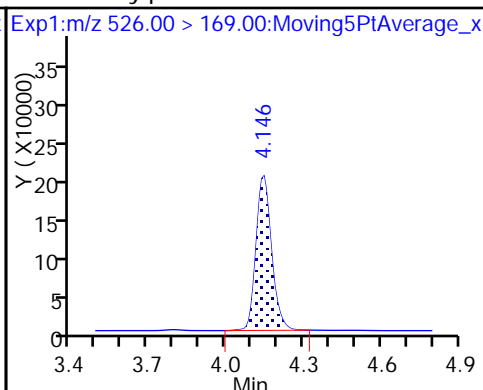
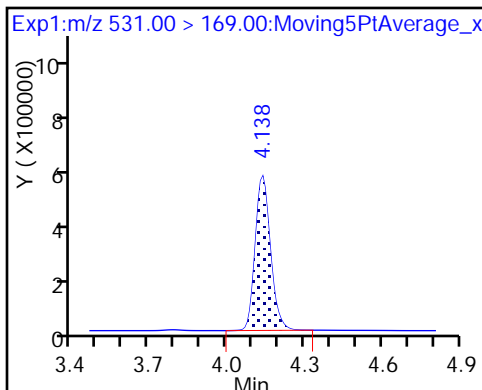
D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

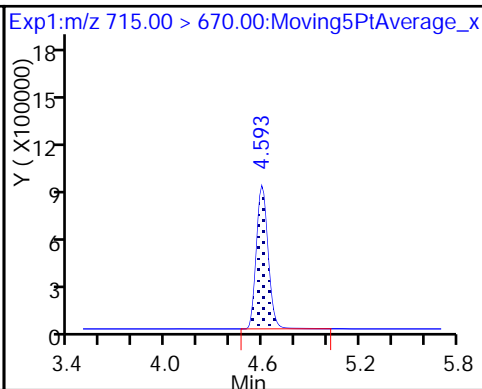
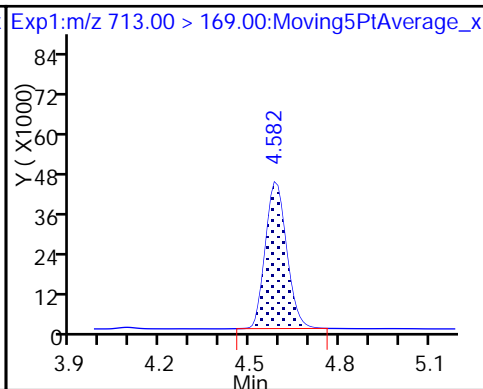
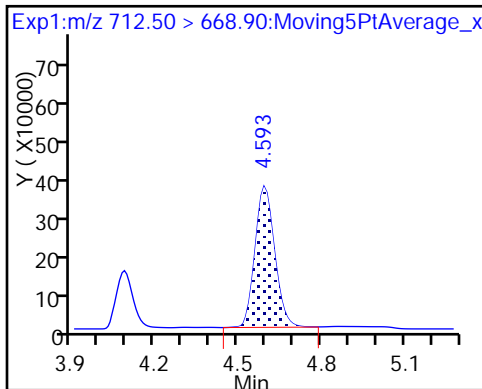
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

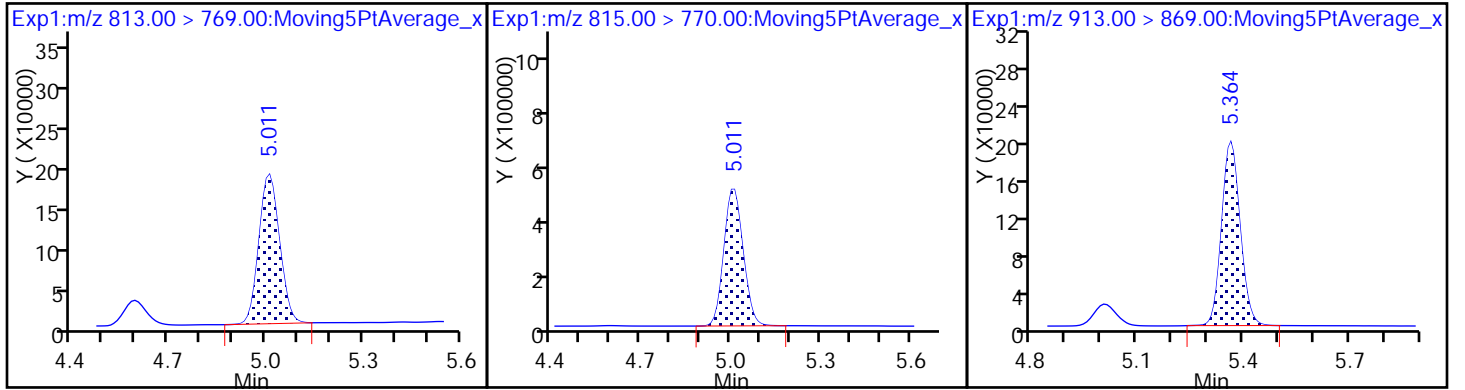
D 43 13C2-PFTeDA



45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175951/12 Calibration Date: 07/25/2017 15:26
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25B_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9454 | | 53.6 | 50.0 | 7.2 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.023 | | 49.1 | 50.0 | -1.9 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.488 | | 44.2 | 44.2 | -0.0 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.8958 | | 47.0 | 50.0 | -5.9 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9784 | | 47.7 | 50.0 | -4.7 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.006 | | 42.3 | 45.5 | -7.1 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8577 | | 45.4 | 47.4 | -4.3 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.011 | | 47.4 | 50.0 | -5.2 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.165 | | 49.5 | 47.6 | 3.9 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.032 | | 45.3 | 46.4 | -2.4 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9003 | | 44.2 | 50.0 | -11.6 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.8913 | | 46.9 | 47.9 | -2.1 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9503 | | 48.5 | 50.0 | -3.0 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9013 | | 50.0 | 50.0 | -0.0 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9250 | | 50.8 | 50.0 | 1.7 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6416 | | 49.7 | 48.2 | 3.1 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8372 | | 49.3 | 50.0 | -1.4 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.009 | | 49.1 | 50.0 | -1.8 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8728 | | 47.5 | 50.0 | -5.0 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.8897 | | 47.9 | 50.0 | -4.2 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9226 | | 49.7 | 50.0 | -0.5 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8932 | | 52.5 | 50.0 | 4.9 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.028 | | 52.8 | 50.0 | 5.5 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8189 | | 51.1 | 50.0 | 2.1 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8205 | | 53.6 | 50.0 | 7.2 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 157364 | | 50.4 | 50.0 | 0.9 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 114276 | | 51.7 | 50.0 | 3.4 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 112682 | | 55.7 | 50.0 | 11.4 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 94165 | | 56.2 | 50.0 | 12.3 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 148491 | | 51.1 | 47.3 | 8.0 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 45465 | | 45.4 | 47.5 | -4.4 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175951/12 Calibration Date: 07/25/2017 15:26
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25B_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 89959 | | 54.8 | 50.0 | 9.5 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 108150 | | 47.8 | 47.8 | -0.0 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 71522 | | 54.4 | 50.0 | 8.8 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 175839 | | 48.1 | 50.0 | -3.8 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 33302 | | 43.7 | 47.9 | -8.8 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 58717 | | 52.6 | 50.0 | 5.2 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 22198 | | 51.1 | 50.0 | 2.1 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 41652 | | 51.1 | 50.0 | 2.3 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 22002 | | 50.2 | 50.0 | 0.3 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 47250 | | 50.1 | 50.0 | 0.3 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 42658 | | 47.8 | 50.0 | -4.5 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 49222 | | 50.4 | 50.0 | 0.8 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 82053 | | 50.5 | 50.0 | 1.0 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 43236 | | 52.3 | 50.0 | 4.7 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_012.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 25-Jul-2017 15:26:41 ALS Bottle#: 32 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 26-Jul-2017 11:33:09 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:31:25

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|-------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.559 | 1.559 | 0.0 | 7868207 | 50.4 | | 101 | 26810 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.559 | 1.559 | 0.0 | 1.000 | 7438568 | 53.6 | 107 | 4145 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.778 | 1.778 | 0.0 | 5713819 | 51.7 | | 103 | 38423 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.778 | 1.778 | 0.0 | 1.000 | 5843746 | 49.1 | 98.1 | 3346 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.797 | 1.797 | 0.0 | 149010 | NC | | | 8564 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.806 | 1.806 | 0.0 | 1.000 | 9769293 | 44.2 | 100.0 | 5460 | |
| | 298.90 > 99.00 | 1.806 | 1.806 | 0.0 | 1.000 | 3911077 | 2.50(0.00-0.00) | | 5267 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.013 | 2.013 | 0.0 | 1.000 | 1974837 | 44.7 | 95.8 | 65963 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.058 | 2.058 | 0.0 | 5634111 | 55.7 | | 111 | 34837 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.058 | 2.058 | 0.0 | 1.000 | 5046944 | 47.0 | 94.1 | 10818 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.393 | 2.393 | 0.0 | 4708274 | 56.2 | | 112 | 22522 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.393 | 2.393 | 0.0 | 1.000 | 4606351 | 47.7 | 95.3 | 9657 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.409 | 2.409 | 0.0 | 7023621 | 51.1 | | 108 | 28736 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.409 | 2.409 | 0.0 | 1.000 | 6793674 | 42.3 | 92.9 | 4986 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|-----------------|-------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.727 | 2.727 | 0.0 | 2159567 | 45.4 | 95.6 | 30402 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.734 | 2.734 | 0.0 | 1848328 | 45.4 | 95.7 | 27501 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.756 | 2.756 | 0.0 | 4497966 | 54.8 | 110 | 25047 | |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.756 | 2.756 | 0.0 | 4356983 | 50.0 | 100 | 27292 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.756 | 2.756 | 0.0 | 4546482 | 47.4 | 94.8 | 958 | |
| | 413.00 | > 169.00 | 2.756 | 2.756 | 0.0 | 2525155 | 1.80(0.90-1.10) | | 9031 | |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.763 | 2.763 | 0.0 | 5998429 | 49.5 | 104 | 25299 | |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.131 | 3.131 | 0.0 | 5177689 | 45.3 | 97.6 | 6526 | |
| | 499.00 | > 99.00 | 3.131 | 3.131 | 0.0 | 1143780 | 4.53(0.90-1.10) | | 29102 | |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.131 | 3.131 | 0.0 | 3576081 | 54.4 | 109 | 14839 | |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.131 | 3.131 | 0.0 | 5169548 | 47.8 | 100.0 | 19498 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.140 | 3.140 | 0.0 | 3219357 | 44.2 | 88.4 | 6877 | |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.487 | 3.487 | 0.0 | 8791957 | 48.1 | 96.2 | 11712 | |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.487 | 3.487 | 0.0 | 1595164 | 43.7 | 91.2 | 14780 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.487 | 3.487 | 0.0 | 1421712 | 46.9 | 97.9 | 14409 | |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.497 | 3.497 | 0.0 | 2935874 | 52.6 | 105 | 8362 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.497 | 3.497 | 0.0 | 7924168 | 50.0 | 99.9 | 11132 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.497 | 3.497 | 0.0 | 2789985 | 48.5 | 97.0 | 7721 | |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.646 | 3.646 | 0.0 | 1109894 | 51.1 | 102 | 7041 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.657 | 3.657 | 0.0 | 1026632 | 50.8 | 102 | 11836 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.803 | 3.803 | 0.0 | 3344408 | 49.7 | 103 | 9254 | |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.822 | 3.822 | 0.0 | 1100097 | 50.2 | 100 | 2591 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.822 | 3.822 | 0.0 | 2101802 | 49.1 | 98.2 | 3782 | |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.822 | 3.822 | 0.0 | 920963 | 49.3 | 98.6 | 7547 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.822 | 3.822 | 0.0 | 2082608 | 51.1 | 102 | 8412 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.979 | 3.979 | 0.0 | 2362511 | 50.1 | 100 | 815 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.987 | 3.987 | 0.0 | 1.000 | 2061990 | 47.5 | 95.0 | 5044 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.116 | 4.116 | 0.0 | 1.000 | 1897615 | 47.9 | 95.8 | 1697 |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.116 | 4.116 | 0.0 | | 2132880 | 47.8 | 95.5 | 4645 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.167 | 4.167 | 0.0 | | 2461076 | 50.4 | 101 | 6678 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.175 | 4.175 | 0.0 | 1.000 | 2270557 | 49.7 | 99.5 | 6178 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.380 | 4.380 | 0.0 | 1.000 | 1905013 | 52.5 | 105 | 680 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.614 | 4.614 | 0.0 | 1.000 | 4325152 | 52.8 | 106 | 289 |
| | 713.00 | > 169.00 | 4.614 | 4.614 | 0.0 | 1.000 | 519148 | 8.33(0.00-0.00) | | 5371 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.614 | 4.614 | 0.0 | | 4102660 | 50.5 | 101 | 17454 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.025 | 5.025 | 0.0 | 1.000 | 1746534 | 51.1 | 102 | 258 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.025 | 5.025 | 0.0 | | 2161781 | 52.3 | 105 | 3570 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.383 | 5.383 | 0.0 | 1.000 | 1749988 | 53.6 | 107 | 779 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_012.d

Injection Date: 25-Jul-2017 15:26:41

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

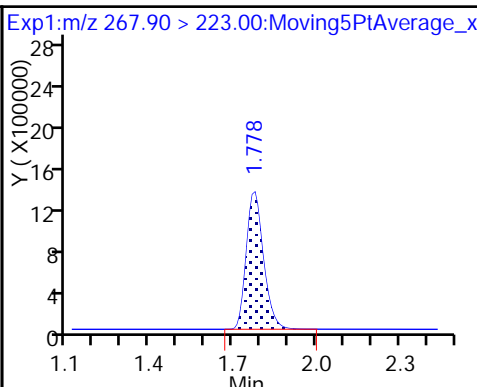
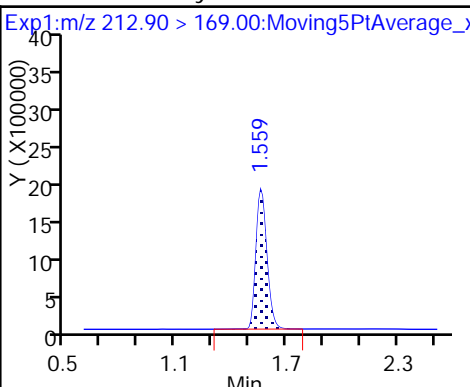
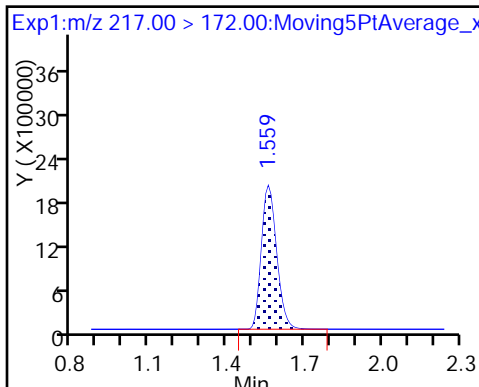
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

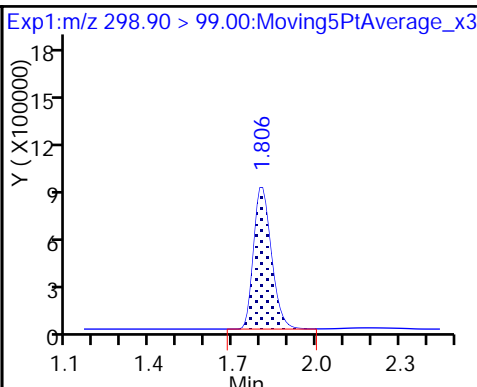
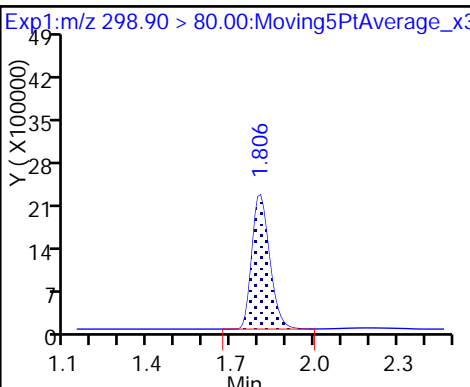
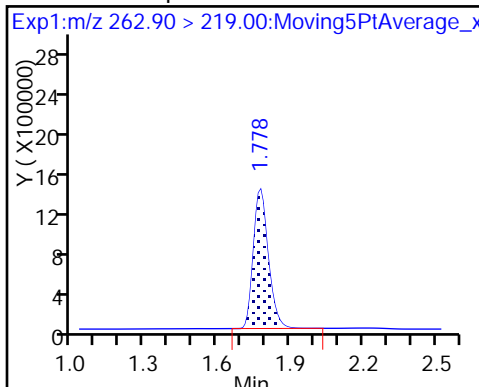
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

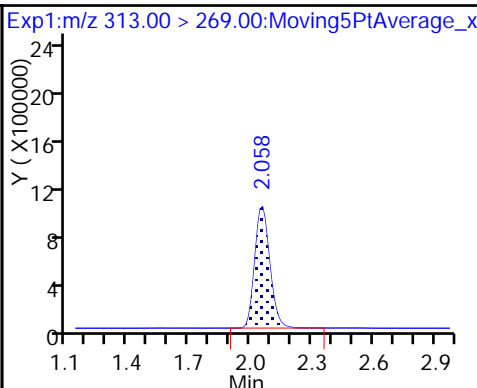
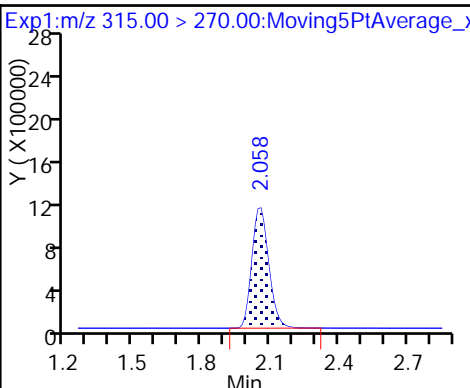
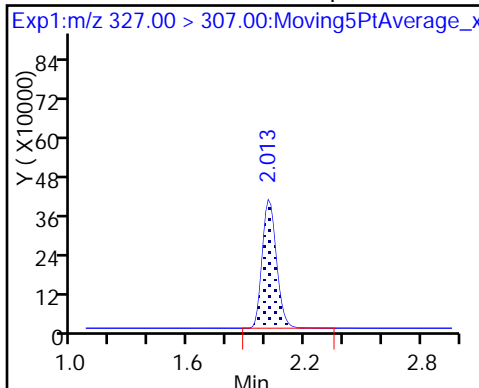
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

D 7 13C2 PFHxA

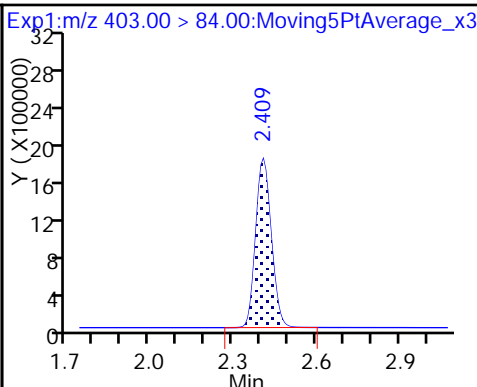
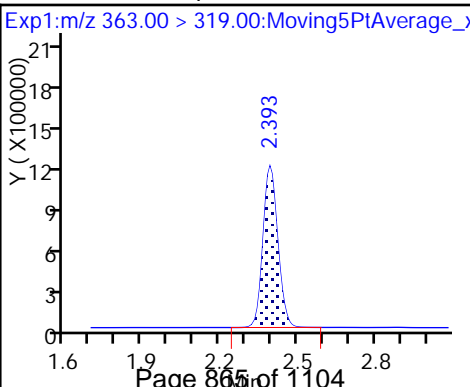
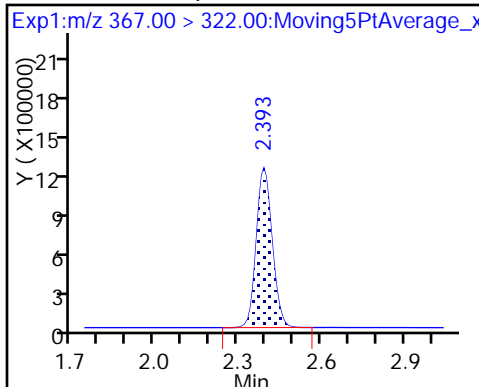
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

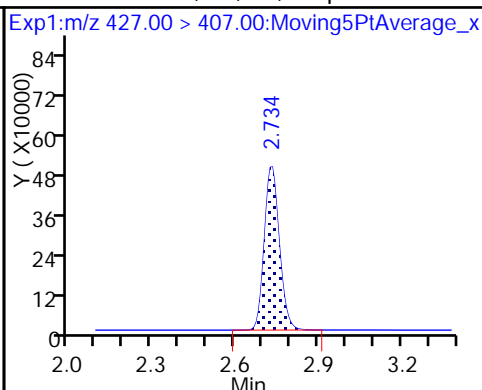
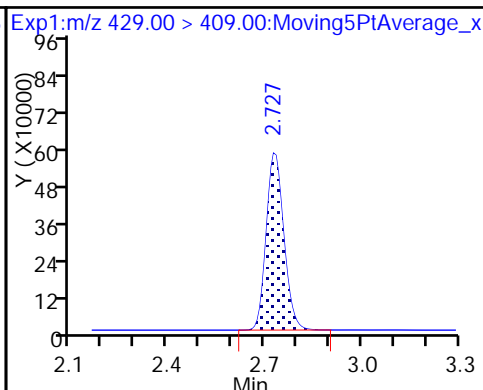
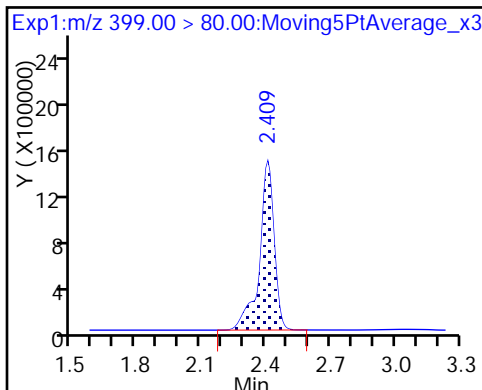
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

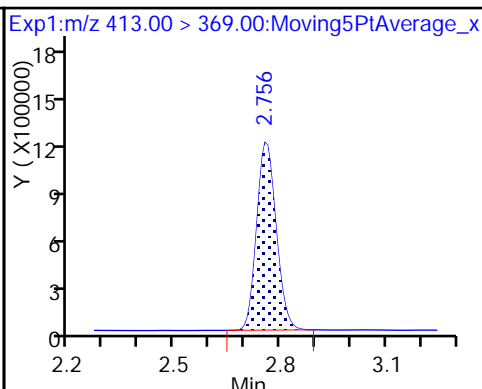
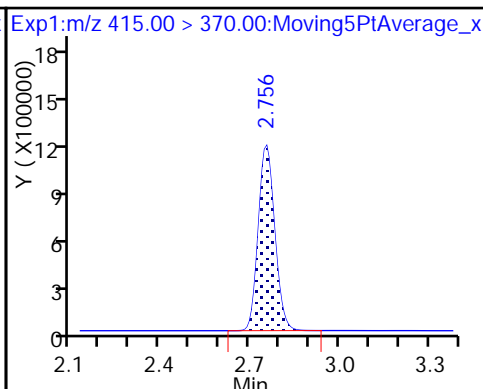
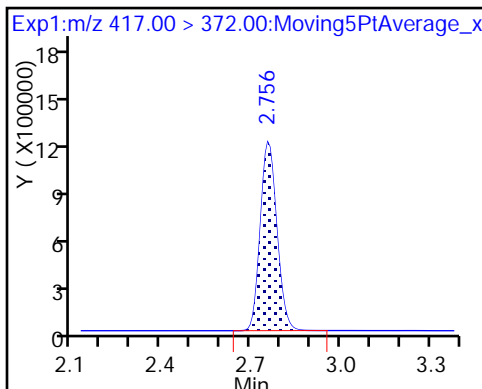
13 Sodium 1H,1H,2H,2H-perfluorooctane



D 14 13C4 PFOA

* 62 13C2-PFOA

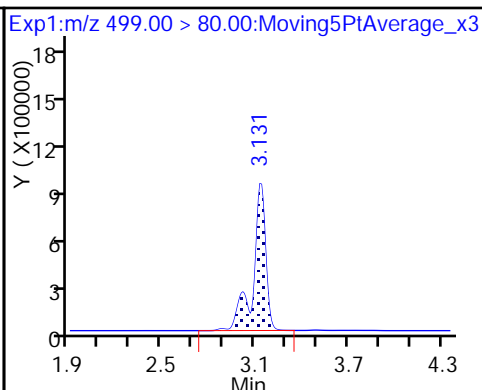
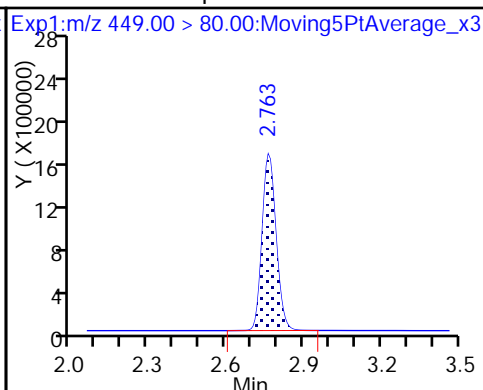
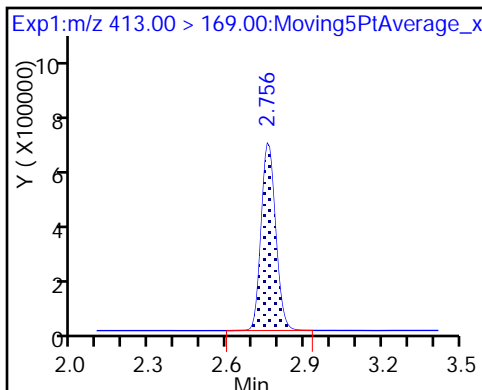
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

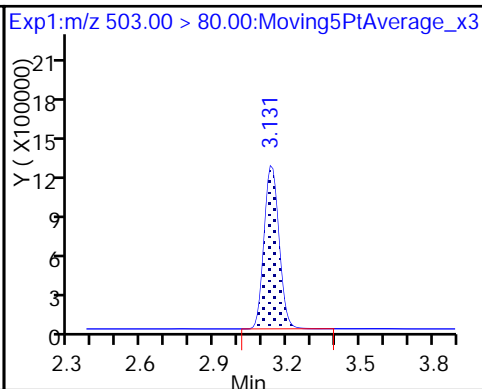
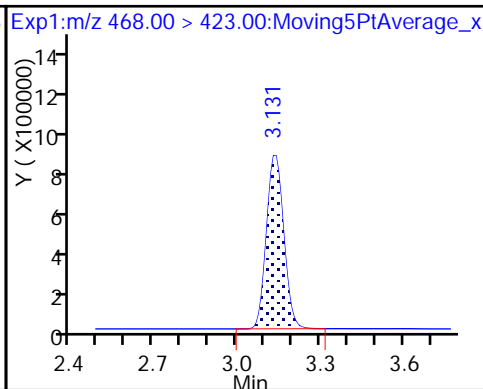
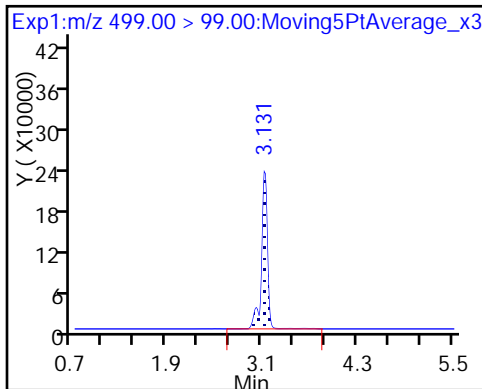
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

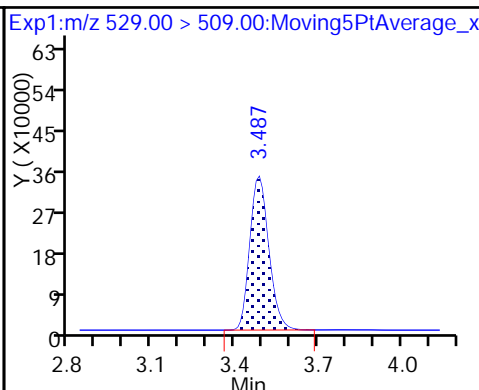
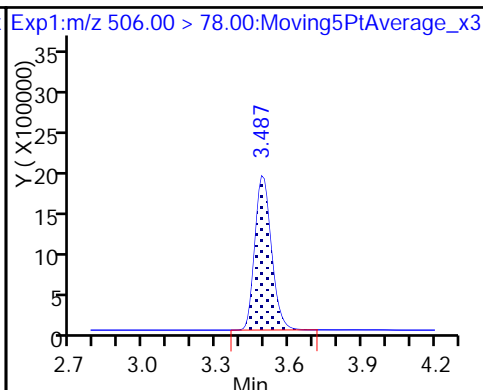
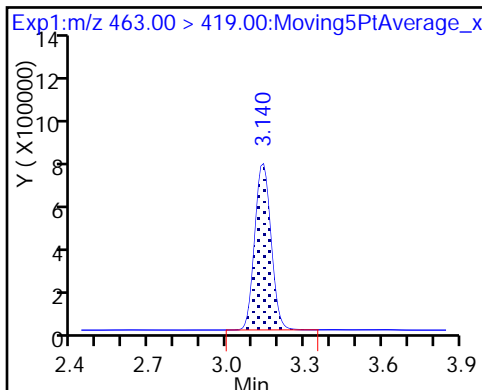
D 18 13C4 PFOS



20 Perfluorononanoic acid

D 21 13C8 FOSA

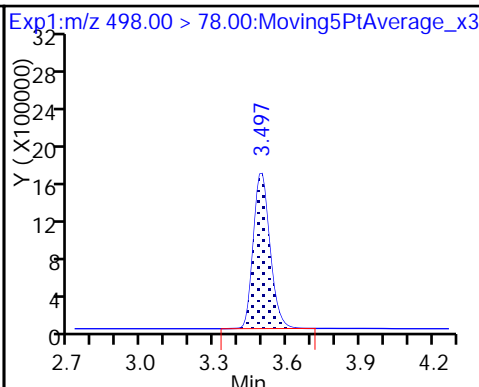
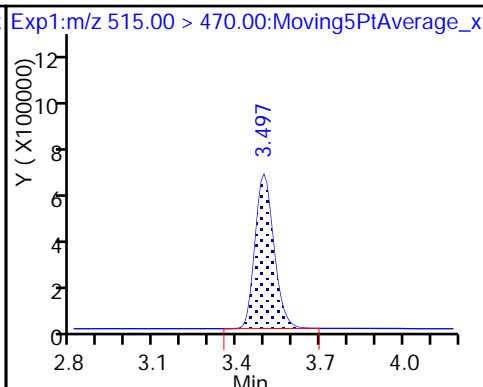
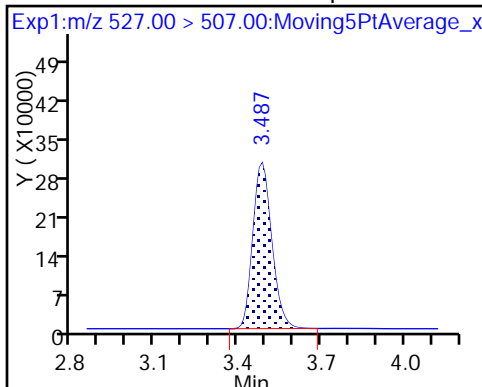
D 26 M2-8:2FTS



25 Sodium 1H,1H,2H,2H-perfluorodeca

D 23 13C2 PFDA

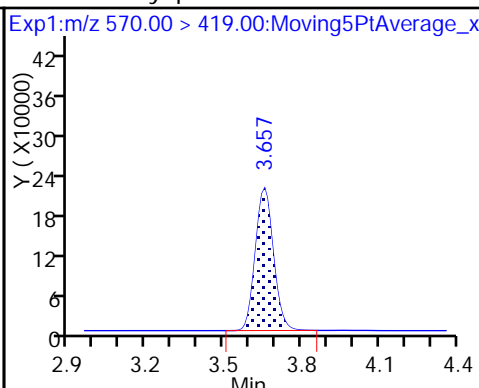
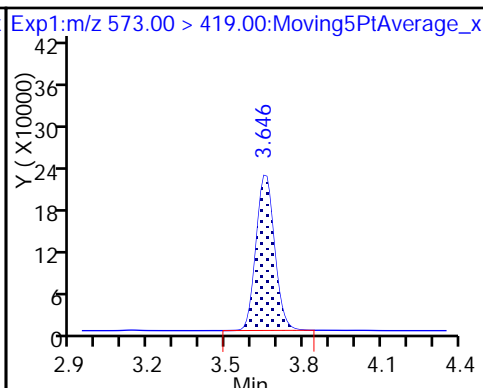
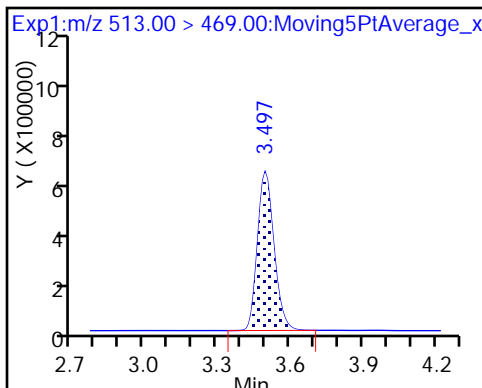
22 Perfluorooctane Sulfonamide



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

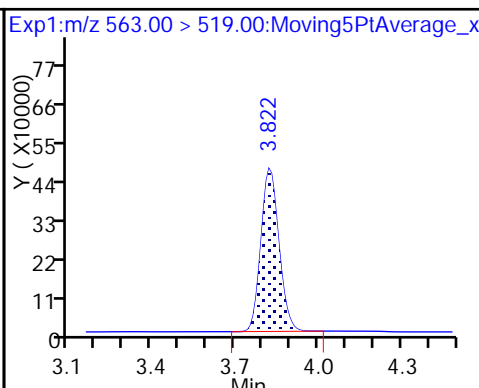
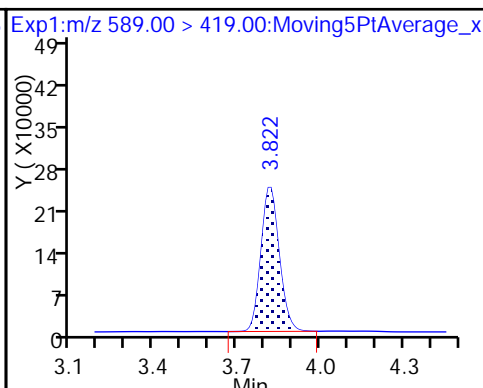
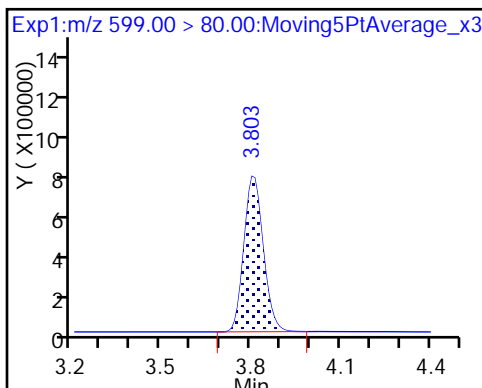
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

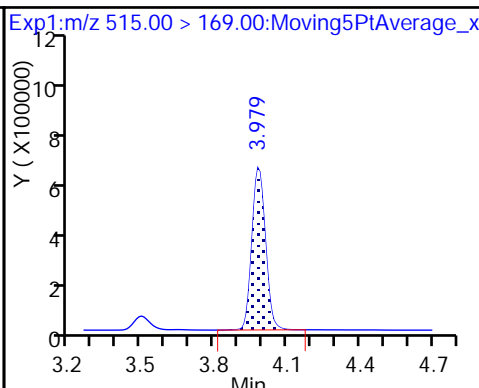
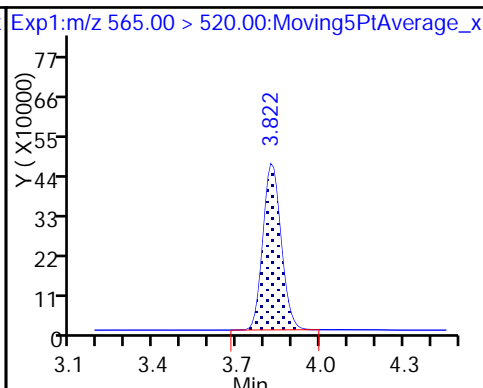
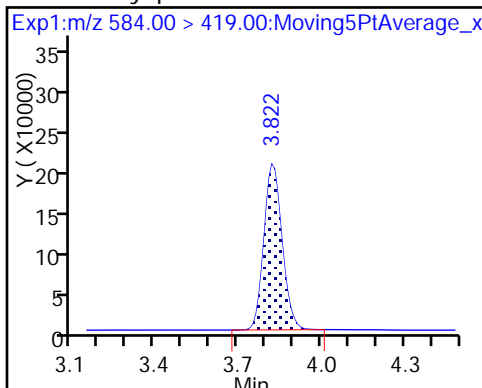
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUa

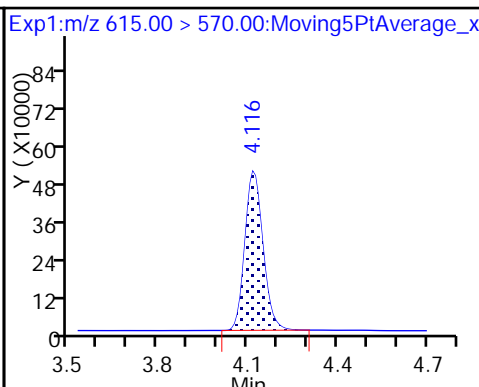
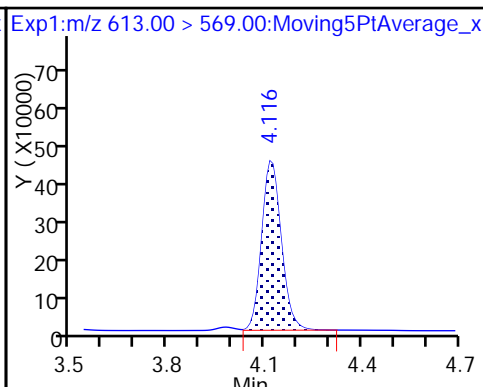
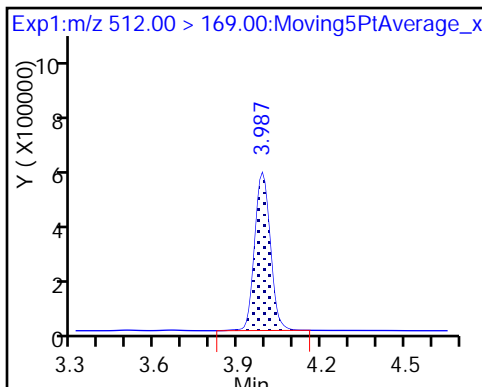
D 34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

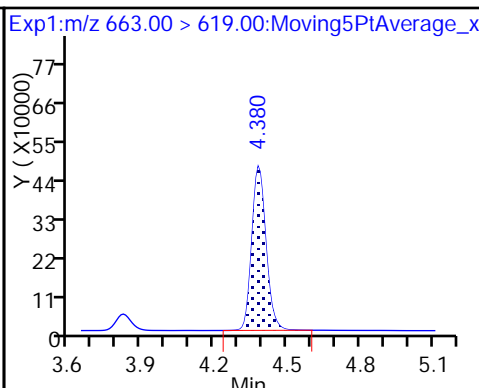
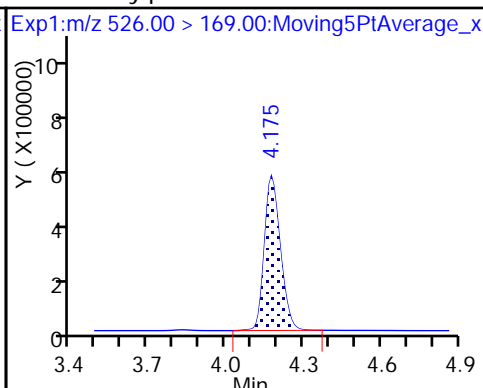
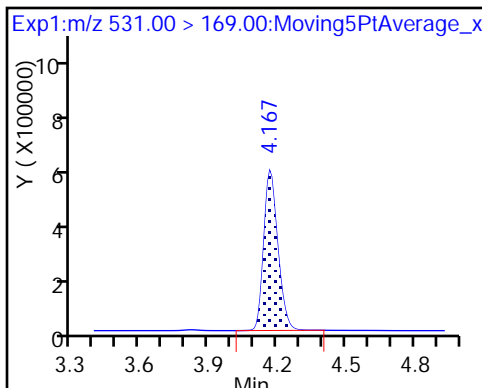
D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

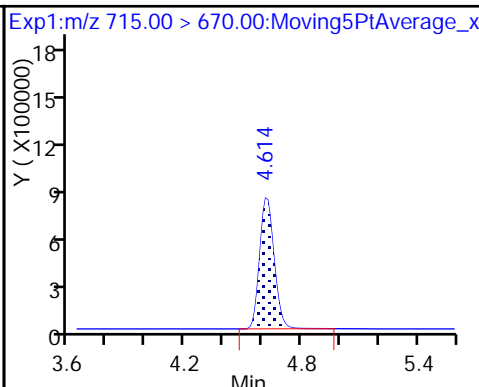
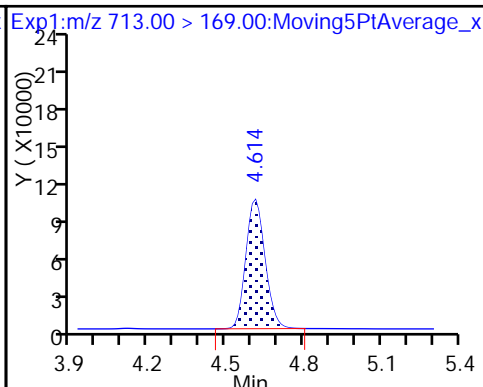
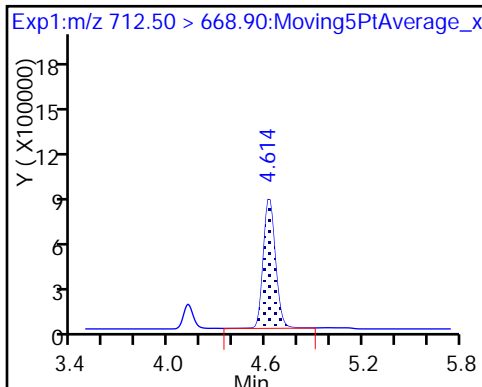
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

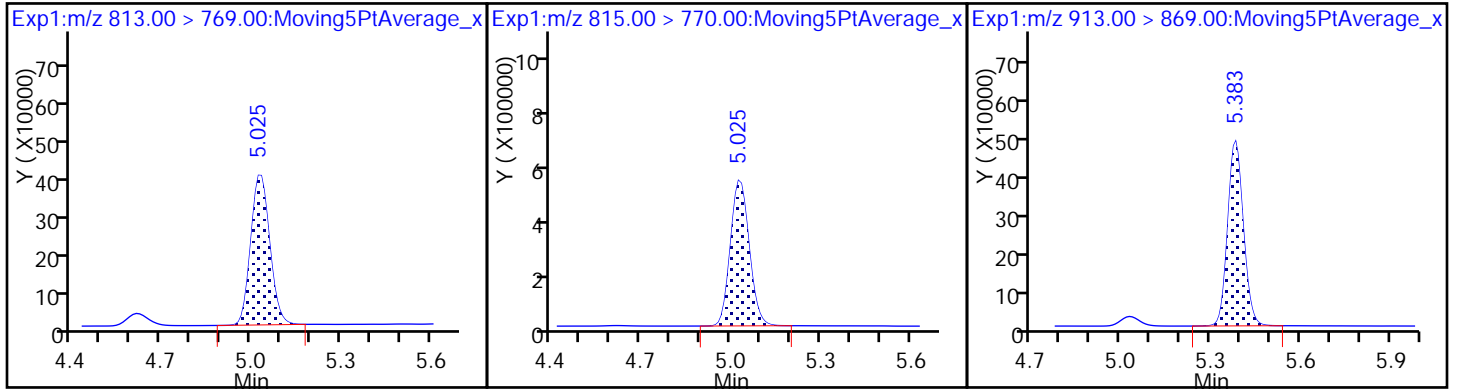
D 43 13C2-PFTeDA



45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-176352/3 Calibration Date: 07/27/2017 12:19
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27A_004.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9189 | | 1.04 | 1.00 | 4.2 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 0.9866 | | 0.947 | 1.00 | -5.3 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.471 | | 0.873 | 0.884 | -1.2 | 50.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9061 | | 0.952 | 1.00 | -4.8 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.076 | | 1.05 | 1.00 | 4.8 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.140 | | 0.959 | 0.910 | 5.3 | 50.0 |
| 6:2FTS | AveID | 0.8958 | 1.019 | | 1.08 | 0.948 | 13.8 | 50.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.047 | | 0.982 | 1.00 | -1.8 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.088 | | 0.924 | 0.952 | -3.0 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.018 | | 0.893 | 0.928 | -3.7 | 50.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9695 | | 0.952 | 1.00 | -4.8 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.8899 | | 0.987 | 1.00 | -1.3 | 50.0 |
| 8:2FTS | AveID | 0.9107 | 0.9055 | | 0.953 | 0.958 | -0.6 | 50.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9303 | | 0.949 | 1.00 | -5.1 | 50.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9218 | | 1.01 | 1.00 | 1.3 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6379 | | 0.988 | 0.964 | 2.5 | 50.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.9035 | | 1.06 | 1.00 | 6.4 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.106 | | 0.973 | 1.00 | -2.7 | 50.0 |
| MeFOSA | AveID | 0.9183 | 0.8647 | | 0.942 | 1.00 | -5.8 | 50.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9072 | | 0.978 | 1.00 | -2.2 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9660 | | 1.04 | 1.00 | 4.0 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8133 | | 0.955 | 1.00 | -4.5 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.181 | | 1.13 | 1.00 | 13.5 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 1.541 | | 1.28 | 1.00 | 28.0 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8208 | | 1.07 | 1.00 | 7.3 | 50.0 |
| 13C4 PFBA | Ave | 156025 | 173504 | | 55.6 | 50.0 | 11.2 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 132018 | | 59.7 | 50.0 | 19.5 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 122309 | | 60.5 | 50.0 | 20.9 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 102447 | | 61.1 | 50.0 | 22.2 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 164725 | | 56.7 | 47.3 | 19.9 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 52803 | | 52.7 | 47.5 | 11.0 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-176352/3 Calibration Date: 07/27/2017 12:19
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27A_004.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 103057 | | 62.7 | 50.0 | 25.5 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 128541 | | 56.8 | 47.8 | 18.8 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 83946 | | 63.8 | 50.0 | 27.7 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 204146 | | 55.8 | 50.0 | 11.7 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 39801 | | 52.2 | 47.9 | 9.0 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 71465 | | 64.0 | 50.0 | 28.0 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 26356 | | 60.6 | 50.0 | 21.3 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 53492 | | 65.7 | 50.0 | 31.3 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 27109 | | 61.8 | 50.0 | 23.6 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 49445 | | 52.5 | 50.0 | 4.9 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 50845 | | 52.1 | 50.0 | 4.1 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 53658 | | 60.1 | 50.0 | 20.2 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 100679 | | 62.0 | 50.0 | 24.0 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 51220 | | 62.0 | 50.0 | 24.0 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170727-45964.b\2017.07.27A_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 27-Jul-2017 12:19:43 ALS Bottle#: 29 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170727-45964.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 27-Jul-2017 16:38:58 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK031

First Level Reviewer: chandrasenas Date: 27-Jul-2017 14:51:47

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.583 | 1.582 | 0.001 | 8675177 | 55.6 | | 111 | 30732 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.583 | 1.582 | 0.001 | 159431 | 1.04 | | 104 | 86.8 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.812 | 1.810 | 0.002 | 6600913 | 59.7 | | 119 | 51450 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.812 | 1.810 | 0.002 | 130253 | 0.9468 | | 94.7 | 78.1 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.844 | 1.831 | 0.013 | 155823 | NC | | | 5548 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.844 | 1.841 | 0.003 | 214219 | 0.8733 | | 98.8 | 149 | |
| | 298.90 > 99.00 | 1.844 | 1.841 | 0.003 | 87553 | | 2.45(0.00-0.00) | | 171 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.066 | 2.052 | 0.014 | 51264 | 1.00 | | 107 | 3379 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.100 | 2.086 | 0.014 | 6115448 | 60.5 | | 121 | 24342 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.100 | 2.086 | 0.014 | 110819 | 0.9517 | | 95.2 | 396 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.441 | 2.426 | 0.015 | 5122338 | 61.1 | | 122 | 18686 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.441 | 2.426 | 0.015 | 110209 | 1.05 | | 105 | 285 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.457 | 2.442 | 0.015 | 7791480 | 56.7 | | 120 | 20630 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.457 | 2.442 | 0.015 | 170847 | 0.9587 | | 105 | 247 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.782 | 2.768 | 0.014 | 2508139 | 52.7 | 111 | 19759 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.782 | 2.768 | 0.014 | 1.000 | 51014 | 1.08 | 114 | 2734 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.804 | 2.790 | 0.014 | 4936980 | 50.0 | 100 | 21866 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.811 | 2.797 | 0.014 | 5152838 | 62.7 | 125 | 22072 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.811 | 2.797 | 0.014 | 1.000 | 107934 | 0.9818 | 98.2 | 23.5 |
| | 413.00 | > 169.00 | 2.811 | 2.797 | 0.014 | 1.000 | 63700 | 1.69(0.90-1.10) | | 783 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.818 | 2.797 | 0.021 | 1.000 | 133178 | 0.9238 | 97.0 | 4569 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.188 | 3.178 | 0.010 | 6144245 | 56.8 | 119 | 21497 | |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.188 | 3.178 | 0.010 | 4197299 | 63.8 | 128 | 14779 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.195 | 3.178 | 0.017 | 1.000 | 81389 | 0.9523 | 95.2 | 219 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.188 | 3.178 | 0.010 | 1.000 | 121403 | 0.8934 | 96.3 | 1728 |
| | 499.00 | > 99.00 | 3.188 | 3.178 | 0.010 | 1.000 | 26158 | 4.64(0.90-1.10) | | 283 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.484 | 3.506 | -0.022 | 1.000 | 181669 | 0.9868 | 98.7 | 3201 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.484 | 3.506 | -0.022 | 10207301 | 55.8 | 112 | 12099 | |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.539 | 3.527 | 0.012 | 1906453 | 52.2 | 109 | 17965 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.539 | 3.527 | 0.012 | 1.000 | 34524 | 0.9525 | 99.4 | 1167 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.560 | 3.538 | 0.022 | 3573252 | 64.0 | 128 | 7238 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.560 | 3.538 | 0.022 | 1.000 | 66484 | 0.9494 | 94.9 | 299 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.709 | 3.694 | 0.015 | 1317779 | 60.6 | 121 | 13527 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.719 | 3.704 | 0.015 | 1.003 | 24294 | 1.01 | 101 | 1039 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.869 | 3.858 | 0.011 | 1.000 | 79041 | 0.9879 | 102 | 3185 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.886 | 3.867 | 0.019 | 1355448 | 61.8 | 124 | 4077 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.886 | 3.876 | 0.010 | 2674584 | 65.7 | 131 | 6769 | |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.886 | 3.876 | 0.010 | 1.000 | 24492 | 1.06 | 106 | 636 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.895 | 3.876 | 0.019 | 1.000 | 59157 | 0.9727 | 97.3 | 146 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags | |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|---|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.963 | 3.996 | -0.033 | 2472270 | 52.5 | 105 | 688 | | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.970 | 4.004 | -0.034 | 1.000 | 42755 | 0.9416 | 94.2 | 1461 | |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.192 | 4.165 | 0.027 | 2682886 | 60.1 | 120 | 3193 | | |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.192 | 4.165 | 0.027 | 1.000 | 51832 | 1.04 | 104 | 10.9 | |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.156 | 4.182 | -0.026 | 2542274 | 52.1 | 104 | 3573 | | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.165 | 4.193 | -0.027 | 1.000 | 46126 | 0.9782 | 97.8 | 1208 | |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.465 | 4.437 | 0.028 | 1.000 | 43642 | 0.9553 | 95.5 | 11.5 | |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.708 | 4.677 | 0.031 | 5033962 | 62.0 | 124 | 4744 | | |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.718 | 4.677 | 0.041 | 1.000 | 117053 | 1.13 | 113 | 9.1 | M |
| | 713.00 | > 169.00 | 4.708 | 4.677 | 0.031 | 0.998 | 14746 | 7.94(0.00-0.00) | 241 | | M |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.145 | 5.095 | 0.049 | 2561016 | 62.0 | 124 | 2389 | | |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.145 | 5.095 | 0.049 | 1.000 | 82673 | 1.28 | 128 | 20.8 | |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.535 | 5.462 | 0.073 | 1.000 | 44041 | 1.07 | 107 | 17.8 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L2_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170727-45964.b\2017.07.27A_004.d

Injection Date: 27-Jul-2017 12:19:43

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

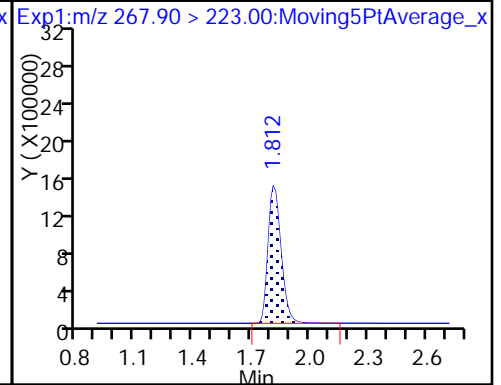
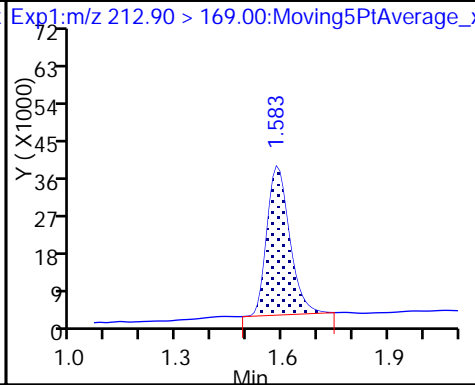
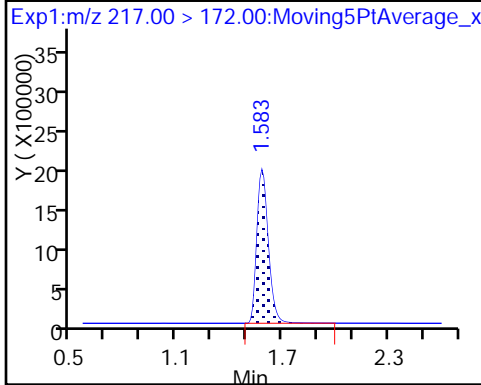
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

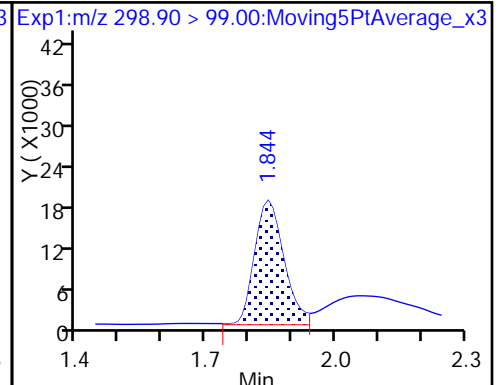
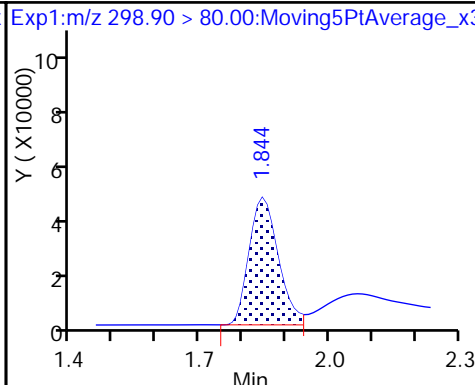
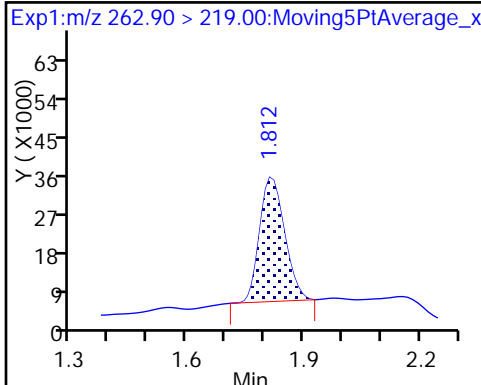
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

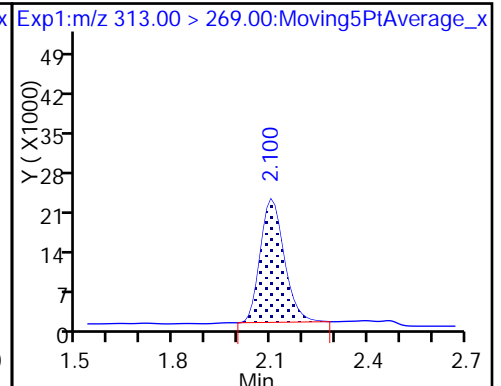
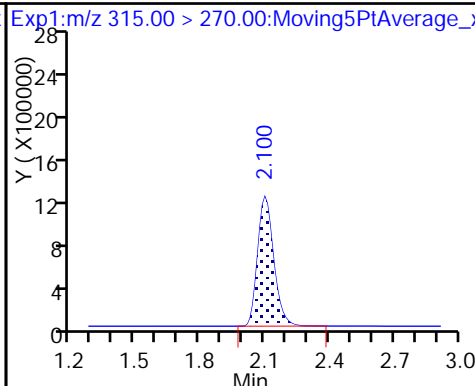
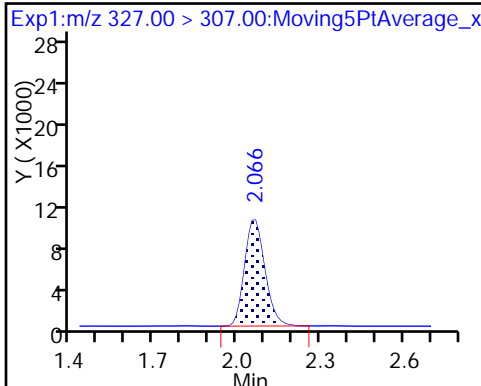
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoate

D 7 13C2 PFHxA

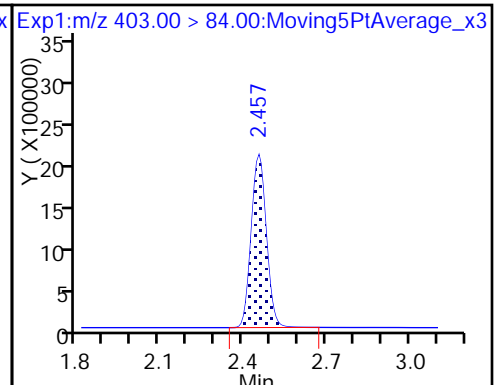
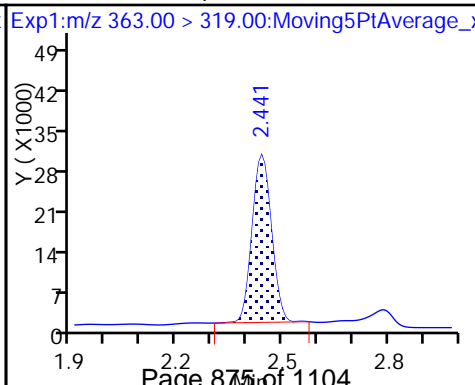
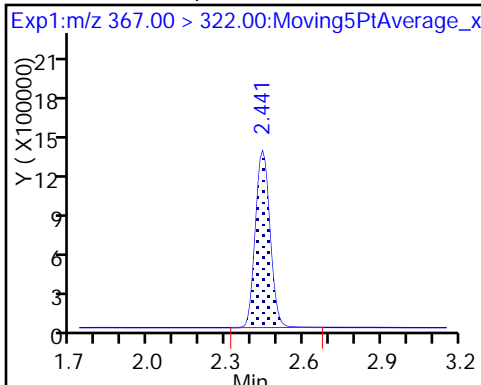
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

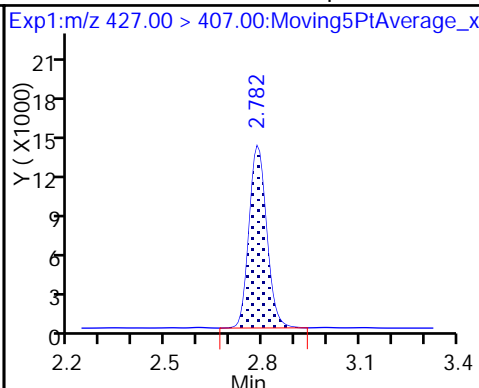
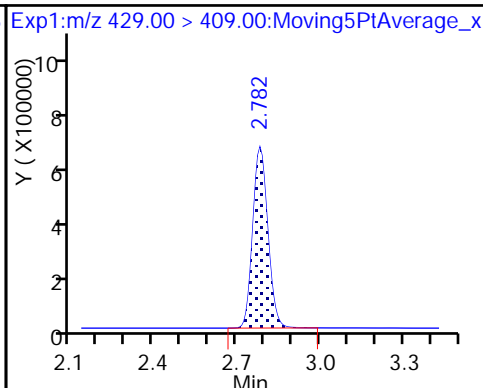
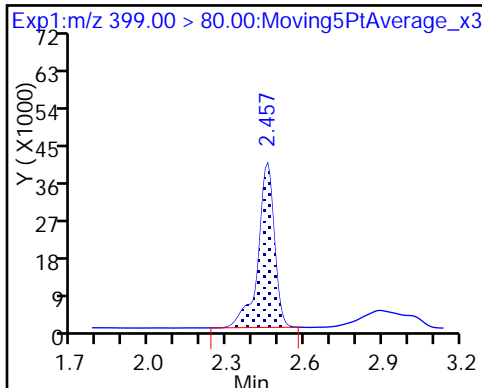
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

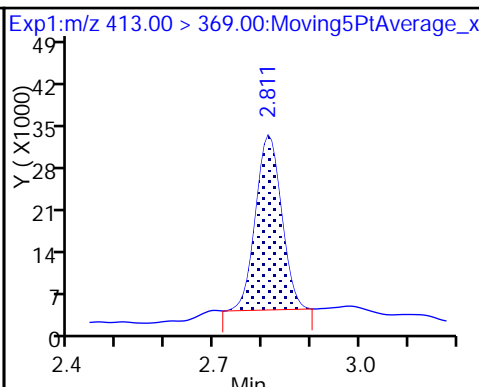
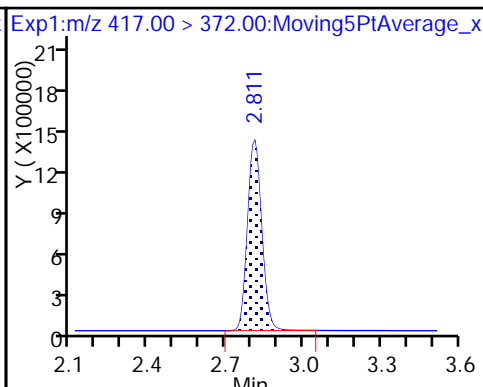
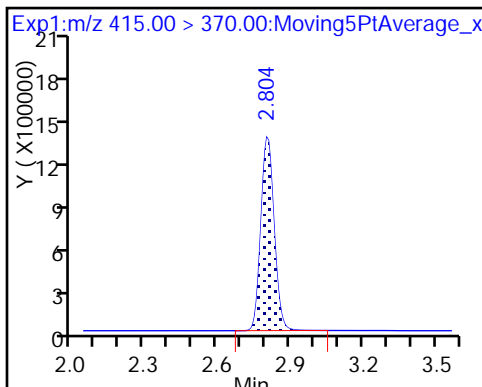
13 Sodium 1H,1H,2H,2H-perfluorooctane



* 62 13C2-PFOA

D 14 13C4 PFOA

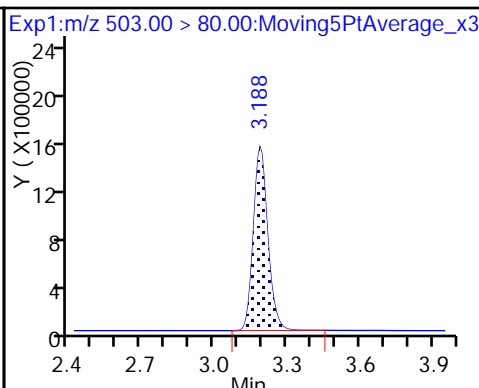
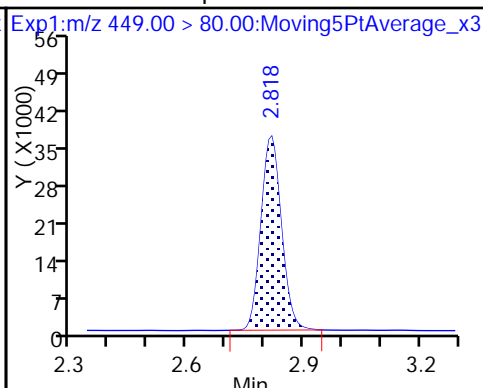
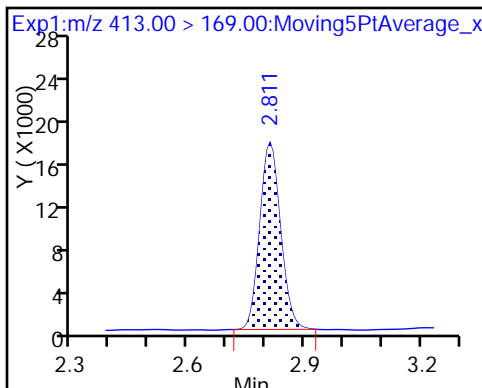
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

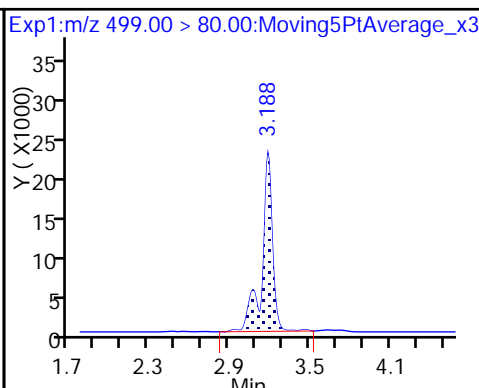
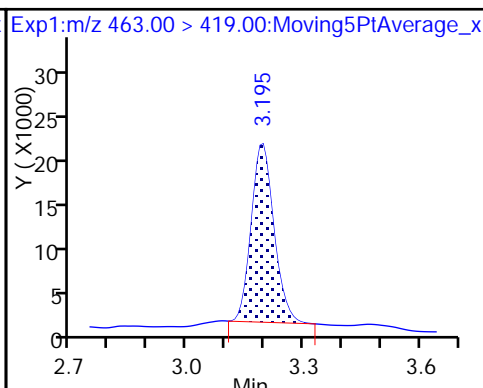
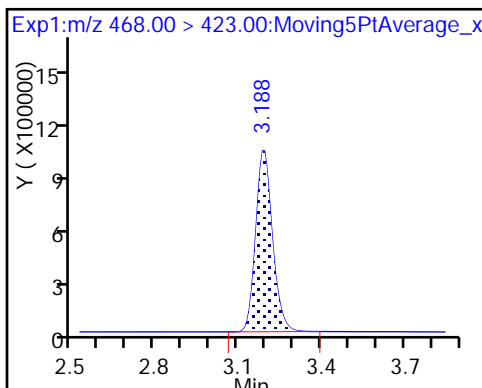
D 18 13C4 PFOS



D 19 13C5 PFNA

20 Perfluorononanoic acid

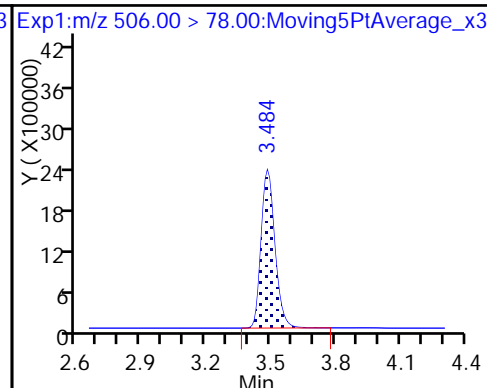
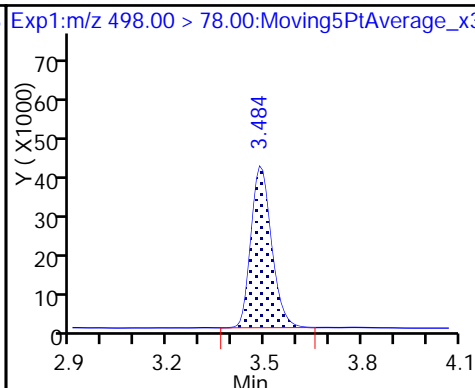
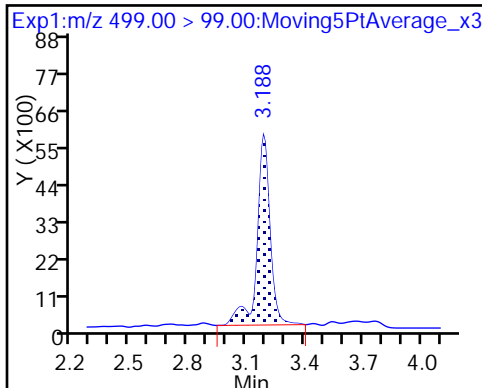
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

22 Perfluorooctane Sulfonamide

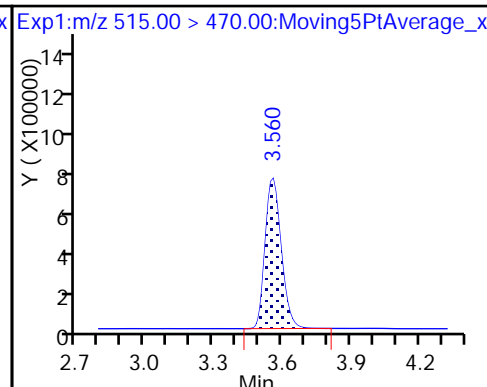
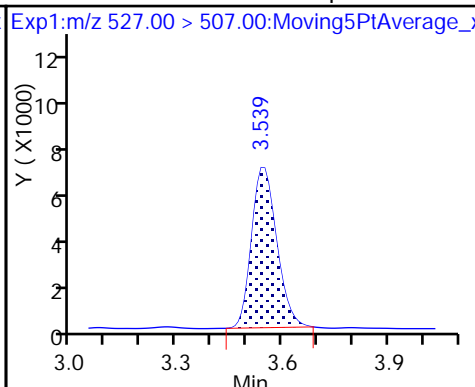
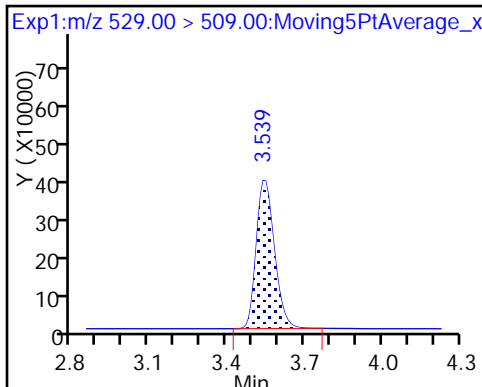
D 21 13C8 FOSA



D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

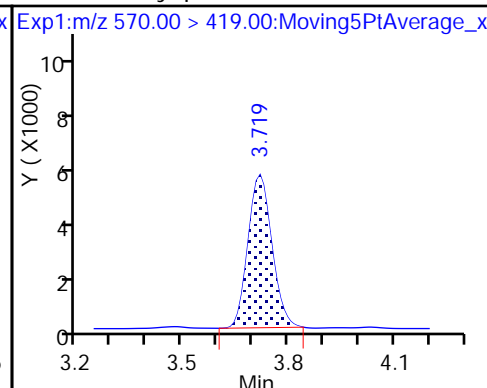
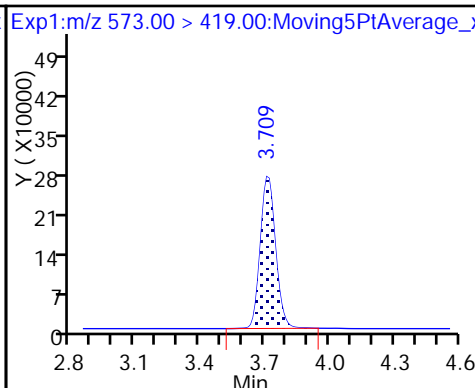
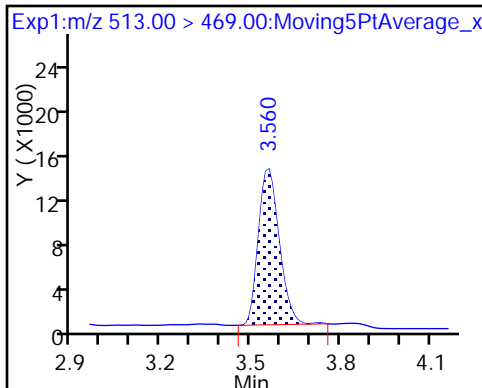
D23 13C2 PFDA



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

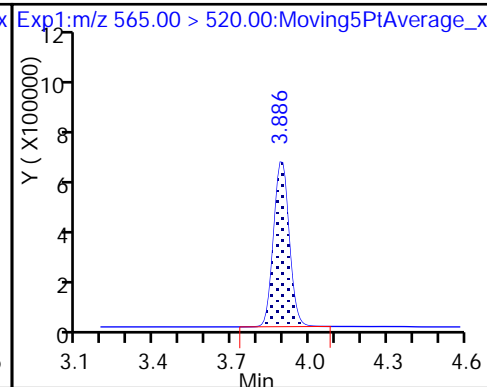
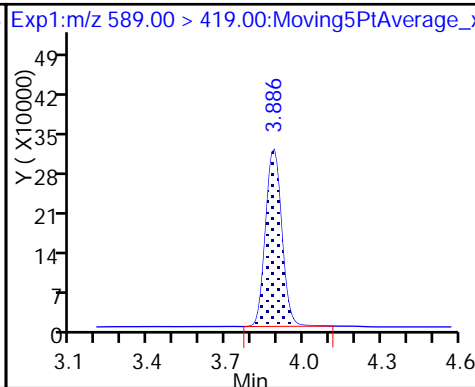
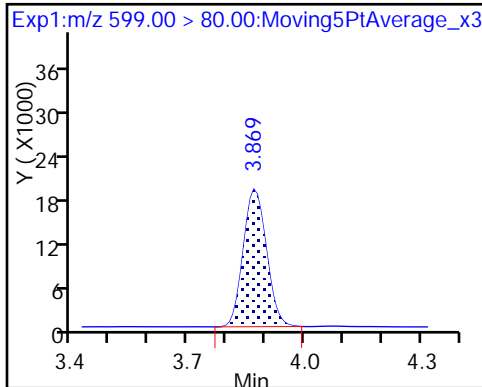
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

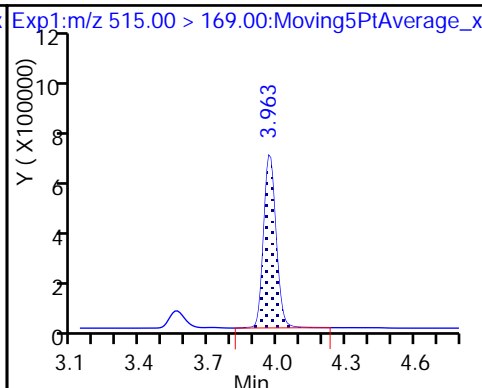
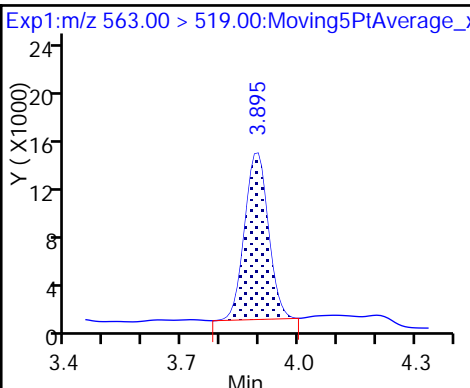
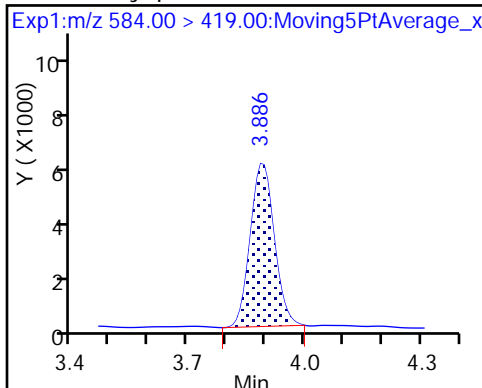
D 30 13C2 PFUnA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

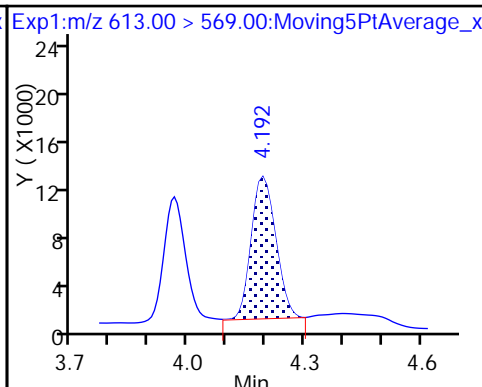
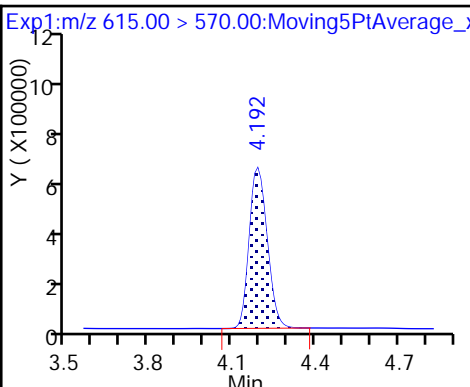
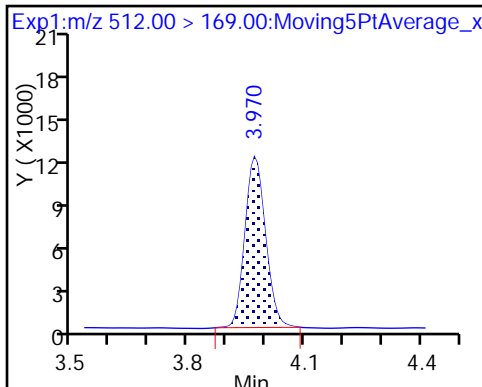
D 34 d-N-MeFOSA-M



35 MeFOSA

D 36 13C2 PFDaA

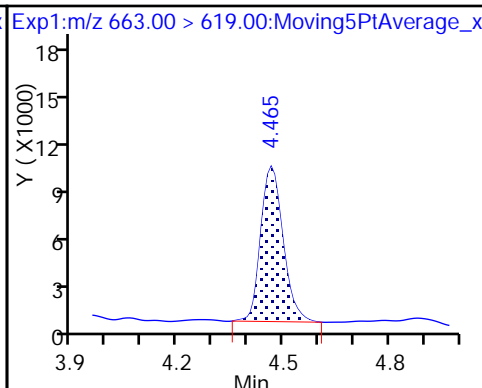
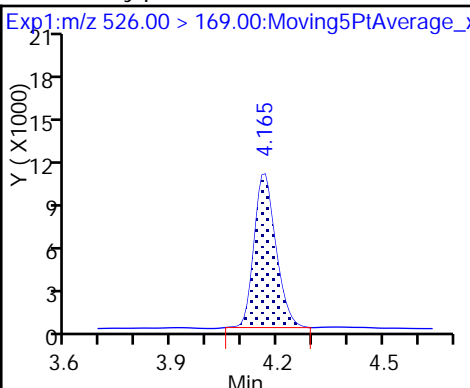
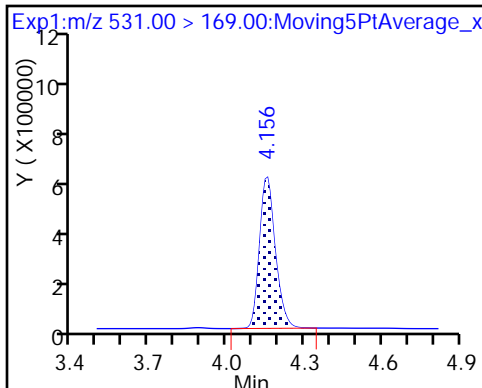
37 Perfluorododecanoic acid



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

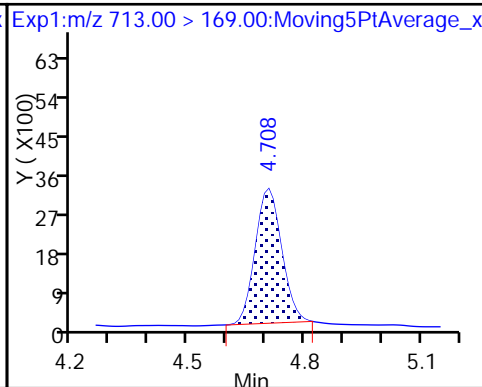
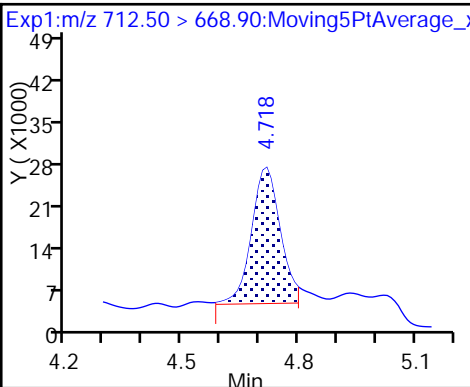
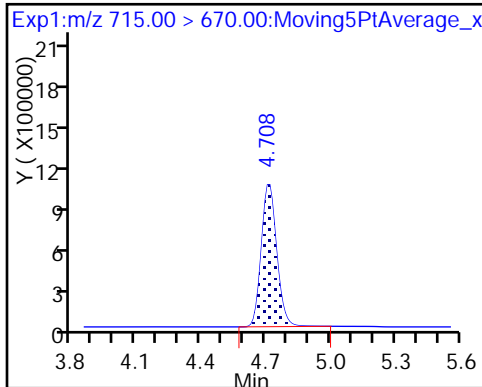
41 Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid (M)

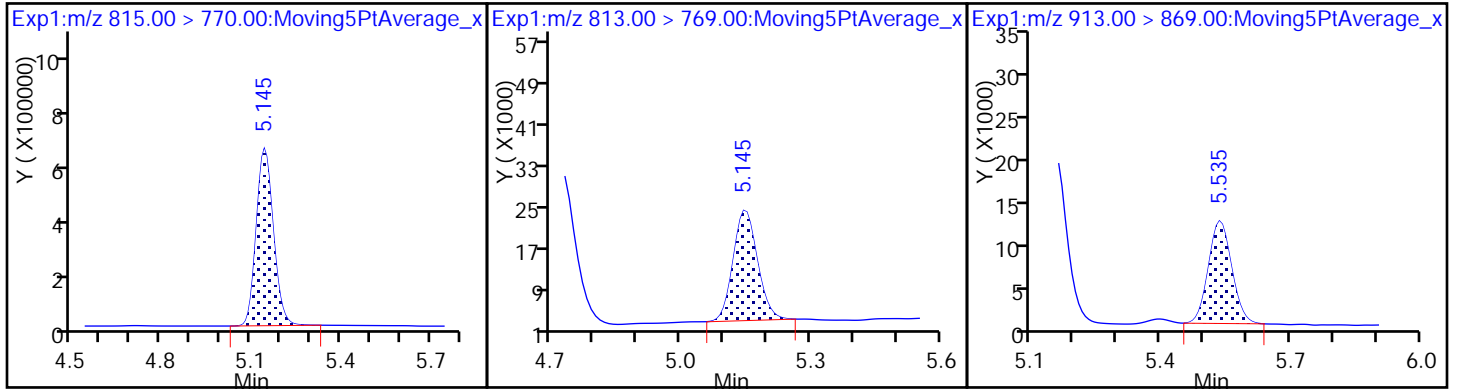
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



TestAmerica Sacramento

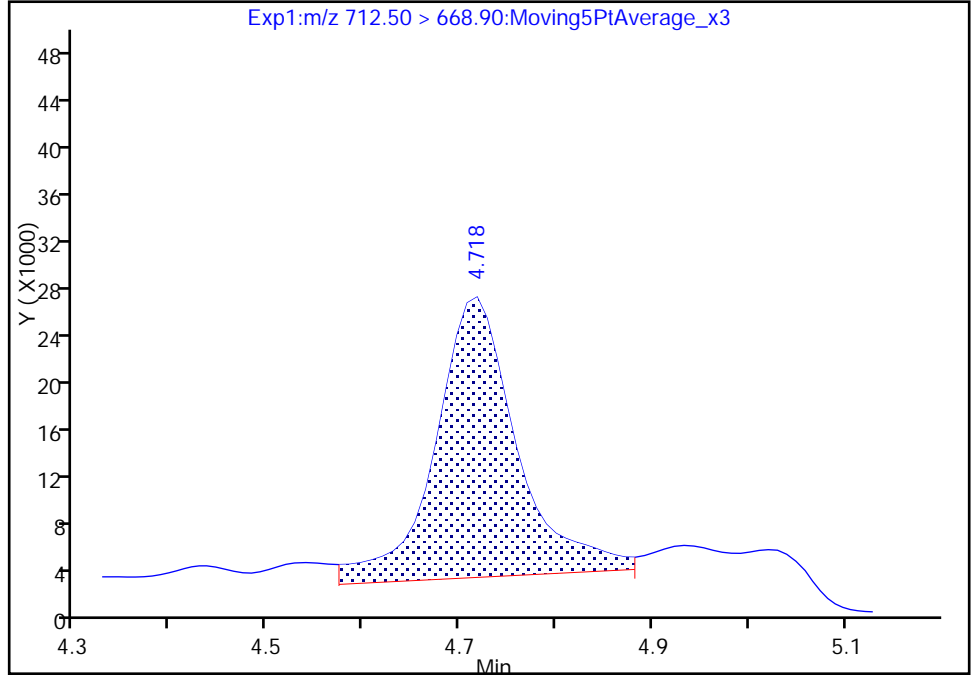
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170727-45964.b\2017.07.27A_004.d
Injection Date: 27-Jul-2017 12:19:43 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

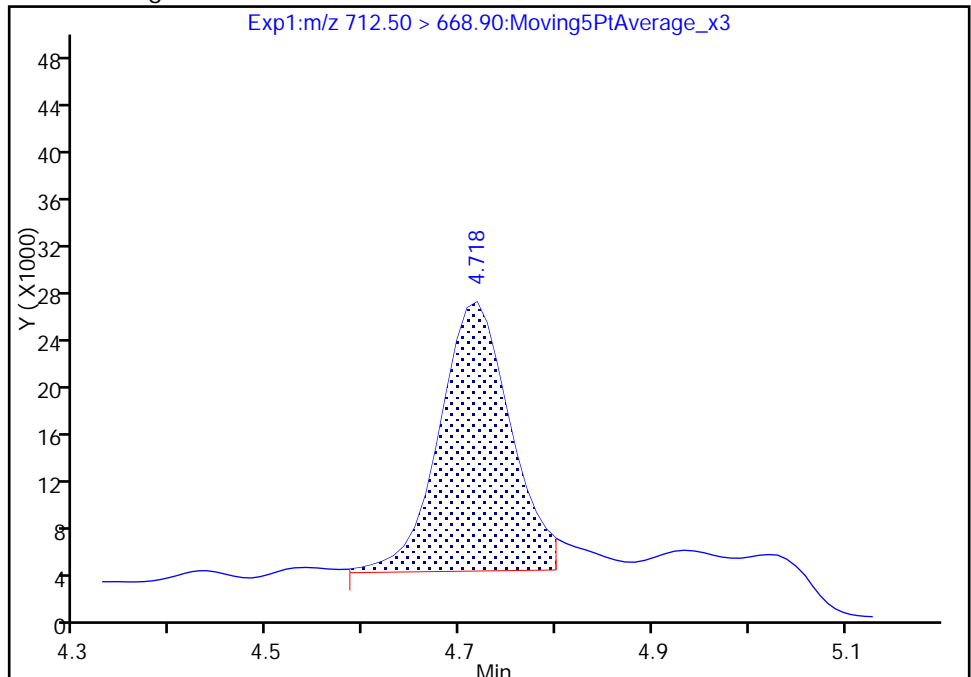
RT: 4.72
Area: 141292
Amount: 1.370007
Amount Units: ng/ml

Processing Integration Results



RT: 4.72
Area: 117053
Amount: 1.134979
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 27-Jul-2017 14:51:20
Audit Action: Manually Integrated

Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/1 Calibration Date: 07/27/2017 20:48
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9633 | | 21.8 | 20.0 | 9.2 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.025 | | 19.7 | 20.0 | -1.7 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.421 | | 16.9 | 17.7 | -4.6 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9720 | | 20.4 | 20.0 | 2.1 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9761 | | 19.0 | 20.0 | -4.9 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 0.9763 | | 16.4 | 18.2 | -9.8 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.9075 | | 19.2 | 19.0 | 1.3 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.037 | | 19.4 | 20.0 | -2.8 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.228 | | 20.8 | 19.0 | 9.5 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 1.000 | | 19.6 | 20.0 | -1.8 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.113 | | 19.5 | 18.6 | 5.3 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9620 | | 20.2 | 19.2 | 5.6 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9208 | | 20.4 | 20.0 | 2.1 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.8767 | | 17.9 | 20.0 | -10.5 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9031 | | 19.8 | 20.0 | -0.8 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6695 | | 20.7 | 19.3 | 7.6 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8705 | | 20.5 | 20.0 | 2.5 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.032 | | 20.0 | 20.0 | 0.1 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.9222 | | 20.1 | 20.0 | 0.4 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9201 | | 19.8 | 20.0 | -1.0 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9040 | | 19.5 | 20.0 | -2.5 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8849 | | 20.8 | 20.0 | 3.9 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.856 | | 19.3 | 20.0 | -3.4 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.9791 | | 24.1 | 20.0 | 20.3 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 1.044 | | 27.3 | 20.0 | 36.5* | 25.0 |
| 13C4 PFBA | Ave | 156025 | 189627 | | 60.8 | 50.0 | 21.5 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 137705 | | 62.3 | 50.0 | 24.6 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 125658 | | 62.1 | 50.0 | 24.2 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 111136 | | 66.3 | 50.0 | 32.6 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 161465 | | 55.6 | 47.3 | 17.5 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 62339 | | 62.3 | 47.5 | 31.1 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/1 Calibration Date: 07/27/2017 20:48
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 102008 | | 62.1 | 50.0 | 24.2 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 110913 | | 49.0 | 47.8 | 2.5 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 78128 | | 59.4 | 50.0 | 18.8 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 193177 | | 52.8 | 50.0 | 5.7 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 48887 | | 64.2 | 47.9 | 33.9 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 72114 | | 64.6 | 50.0 | 29.2 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 25607 | | 58.9 | 50.0 | 17.8 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 25970 | | 59.2 | 50.0 | 18.4 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 49147 | | 60.3 | 50.0 | 20.7 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 48915 | | 51.9 | 50.0 | 3.8 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 50771 | | 56.8 | 50.0 | 13.7 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 52382 | | 53.6 | 50.0 | 7.3 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 90271 | | 55.6 | 50.0 | 11.1 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 56162 | | 68.0 | 50.0 | 36.0 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_001.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 27-Jul-2017 20:48:52 ALS Bottle#: 31 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 28-Jul-2017 14:14:10 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK013

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.574 | 1.565 | 0.009 | 1.000 | 3653510 | 21.8 | 109 | 1156 | |
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.565 | 1.565 | 0.0 | | 9481363 | 60.8 | 122 | 18580 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.793 | 1.784 | 0.009 | 1.000 | 2822097 | 19.7 | 98.3 | 1307 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.793 | 1.784 | 0.009 | | 6885270 | 62.3 | 125 | 30652 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.813 | 1.802 | 0.011 | | 151895 | NC | | 8462 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.813 | 1.812 | 0.001 | 1.000 | 4057281 | 16.9 | 95.4 | 2720 | |
| | 298.90 > 99.00 | 1.813 | 1.812 | 0.001 | 1.000 | 1691026 | 2.40(0.00-0.00) | | 2772 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.032 | 2.020 | 0.012 | 1.000 | 1215900 | 20.1 | 107 | 24213 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.066 | 2.054 | 0.012 | 1.000 | 2442705 | 20.4 | 102 | 3717 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.066 | 2.054 | 0.012 | | 6282893 | 62.1 | 124 | 18916 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.402 | 2.385 | 0.017 | 1.000 | 2169507 | 19.0 | 95.1 | 2739 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.402 | 2.385 | 0.017 | | 5556793 | 66.3 | 133 | 15821 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.418 | 2.401 | 0.017 | 1.000 | 2869086 | 16.4 | 90.2 | 2209 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.418 | 2.401 | 0.017 | | 7637307 | 55.6 | 117 | 22586 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.735 | 2.711 | 0.024 | 1.000 | 1072574 | 19.2 | 101 | 23678 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.735 | 2.711 | 0.024 | 2961107 | 62.3 | 131 | 17939 | |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.756 | 2.733 | 0.023 | 5128145 | 50.0 | 100 | 17240 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.764 | 2.740 | 0.024 | 1.000 | 2116024 | 19.4 | 97.2 | 360 |
| | 413.00 | > 169.00 | 2.764 | 2.740 | 0.024 | 1.000 | 1185632 | 1.78(0.90-1.10) | | 5123 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.764 | 2.740 | 0.024 | 5100413 | 62.1 | 124 | 23465 | |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.771 | 2.747 | 0.024 | 1.000 | 2592740 | 20.8 | 109 | 13929 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.144 | 3.111 | 0.033 | 1.000 | 1562349 | 19.6 | 98.2 | 3663 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.144 | 3.111 | 0.033 | 1.000 | 2290939 | 19.5 | 105 | 56506 |
| | 499.00 | > 99.00 | 3.144 | 3.111 | 0.033 | 1.000 | 446610 | 5.13(0.90-1.10) | | 2850 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.144 | 3.111 | 0.033 | 3906399 | 59.4 | 119 | 11498 | |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.144 | 3.111 | 0.033 | 5301658 | 49.0 | 103 | 16102 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.489 | 3.454 | 0.035 | 1.000 | 3557611 | 20.4 | 102 | 12125 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.489 | 3.454 | 0.035 | 1.000 | 901063 | 20.2 | 106 | 12359 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.489 | 3.454 | 0.035 | 9658834 | 52.8 | 106 | 14110 | |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.489 | 3.454 | 0.035 | 2341702 | 64.2 | 134 | 15254 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.507 | 3.474 | 0.033 | 1.000 | 1264367 | 17.9 | 89.5 | 3722 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.507 | 3.474 | 0.033 | 3605677 | 64.6 | 129 | 6559 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.662 | 3.631 | 0.031 | 1.000 | 462505 | 19.8 | 99.2 | 5094 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.662 | 3.631 | 0.031 | 1280366 | 58.9 | 118 | 6213 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.817 | 3.777 | 0.040 | 1.000 | 1431645 | 20.7 | 108 | 8060 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.826 | 3.787 | 0.039 | 1298519 | 59.2 | 118 | 2766 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.835 | 3.797 | 0.038 | 1.000 | 1014555 | 20.0 | 100 | 1412 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.835 | 3.797 | 0.038 | 1.002 | 452116 | 20.5 | 103 | 4134 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.835 | 3.797 | 0.038 | 2457356 | 60.3 | 121 | 6875 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.991 | 3.956 | 0.035 | 1.000 | 902136 | 20.1 | 100 | 4774 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.991 | 3.956 | 0.035 | 2445746 | 51.9 | 104 | 659 | |
| D 36 13C2 PFDaA | 615.00 | > 570.00 | 4.129 | 4.088 | 0.041 | 2538572 | 56.8 | 114 | 3122 | |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.129 | 4.096 | 0.033 | 1.000 | 934294 | 19.8 | 99.0 | 532 |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 | > 169.00 | 4.180 | 4.147 | 0.033 | 1.000 | 947042 | 19.5 | 97.5 | 3805 |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.171 | 4.147 | 0.024 | 2619105 | 53.6 | 107 | 3103 | |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.396 | 4.358 | 0.038 | 1.000 | 898572 | 20.8 | 104 | 197 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.630 | 4.593 | 0.037 | 1.000 | 1884538 | 19.3 | 96.6 | 112 |
| | 713.00 | > 169.00 | 4.619 | 4.593 | 0.026 | 0.998 | 220482 | 8.55(0.00-0.00) | | 1579 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.630 | 4.593 | 0.037 | 4513564 | 55.6 | 111 | 3220 | |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.037 | 5.005 | 0.032 | 2808112 | 68.0 | 136 | 1570 | |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.037 | 5.015 | 0.022 | 1.000 | 994197 | 24.1 | 120 | 106 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.386 | 5.365 | 0.021 | 1.000 | 1060248 | 27.3 | 136 | 269 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULLL-L4_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_001.d

Injection Date: 27-Jul-2017 20:48:52

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

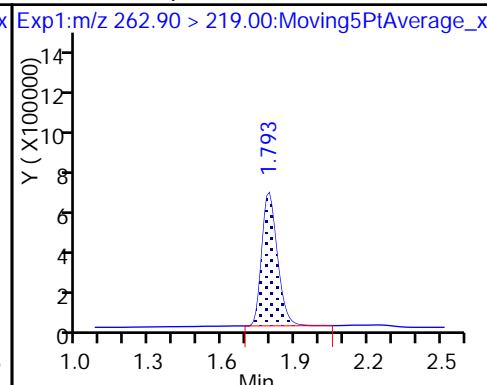
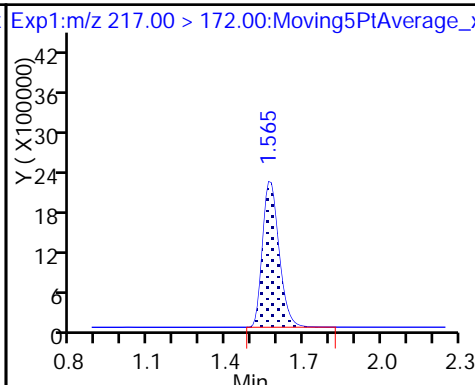
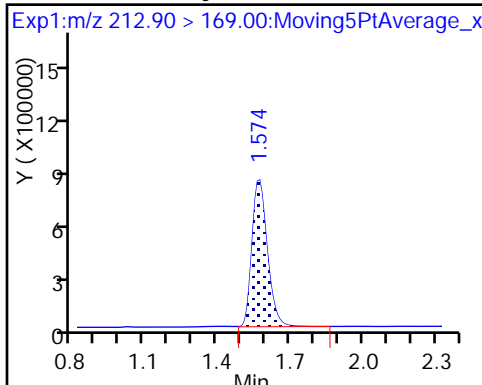
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

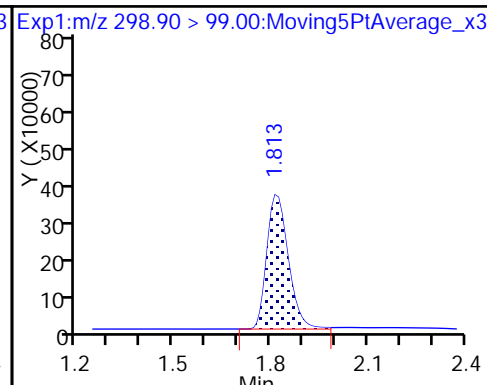
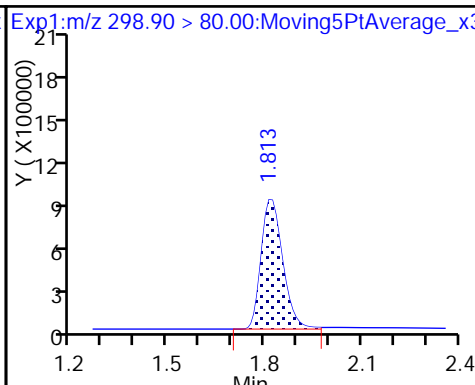
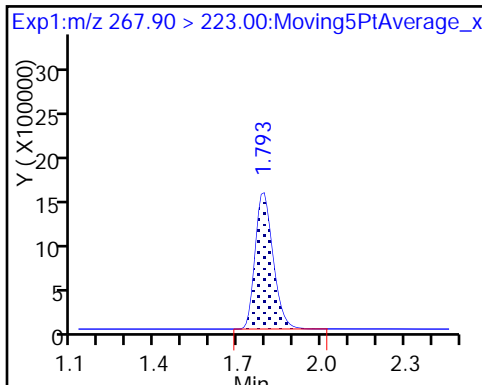
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

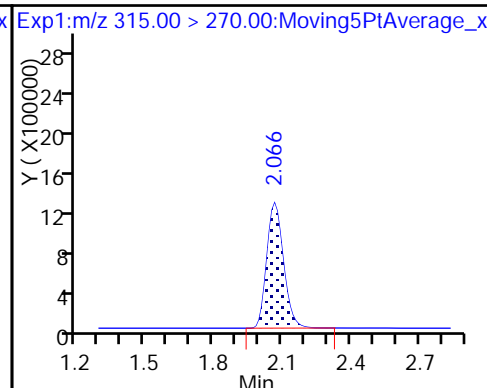
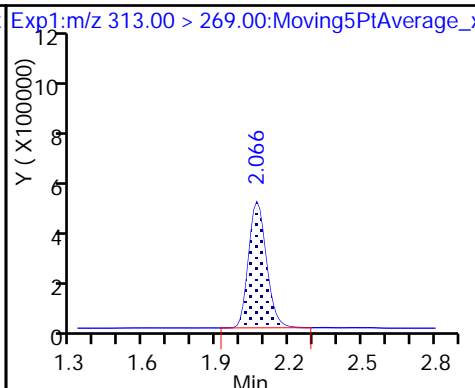
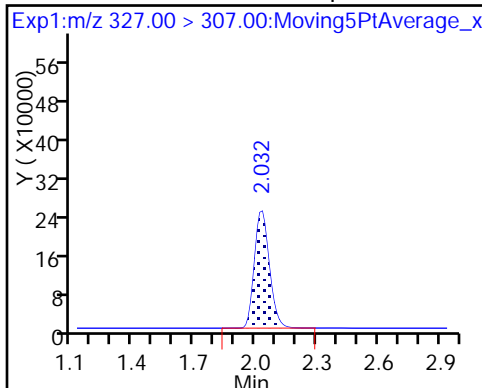
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorhexanoic acid

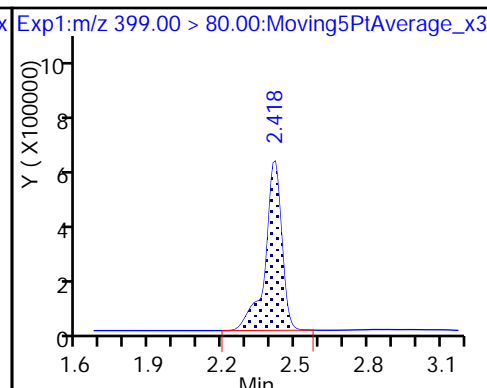
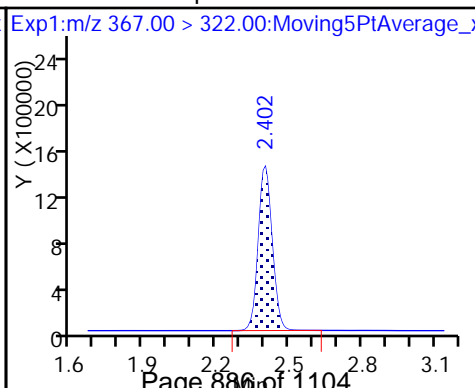
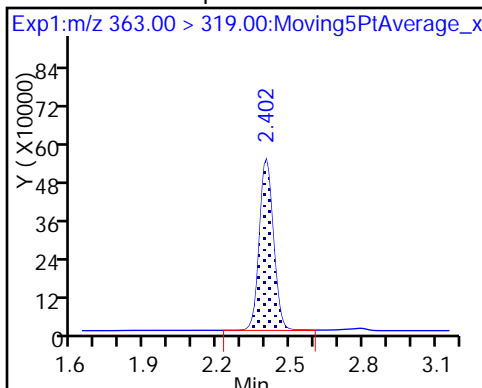
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

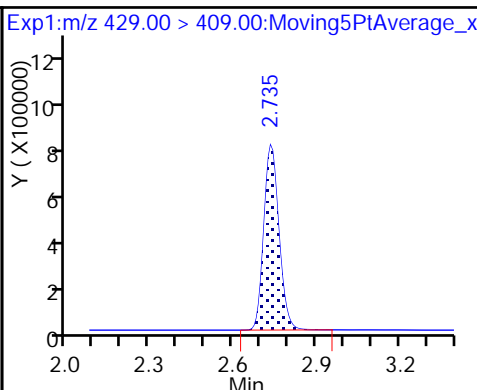
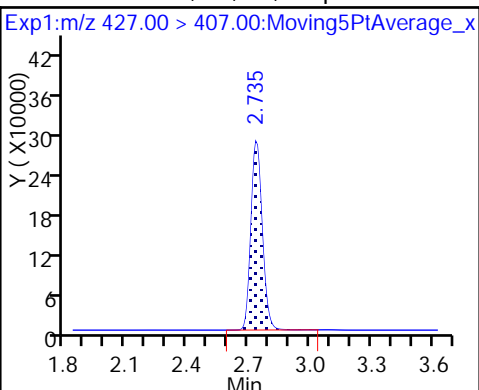
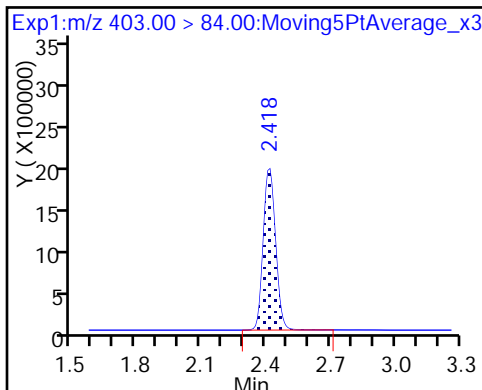
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

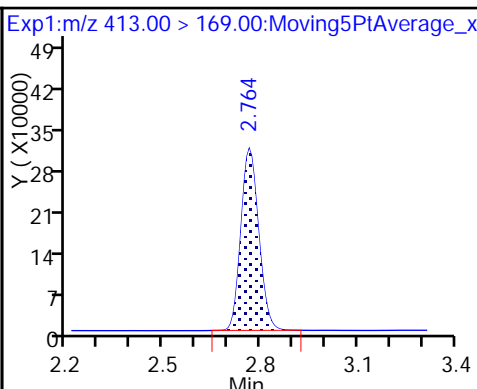
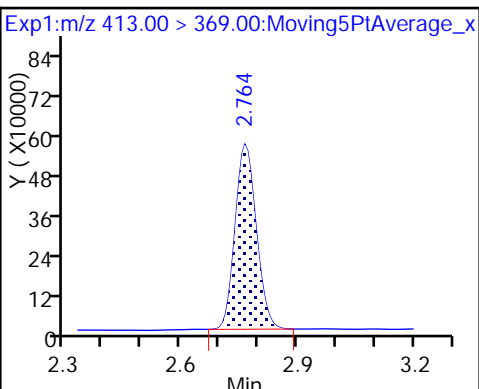
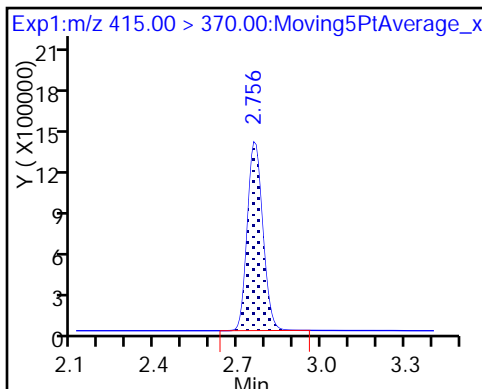
D 12 M2-6:2FTS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

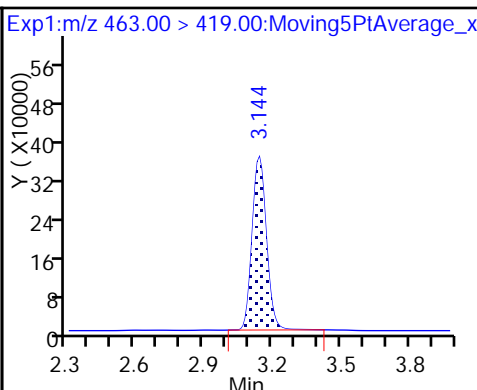
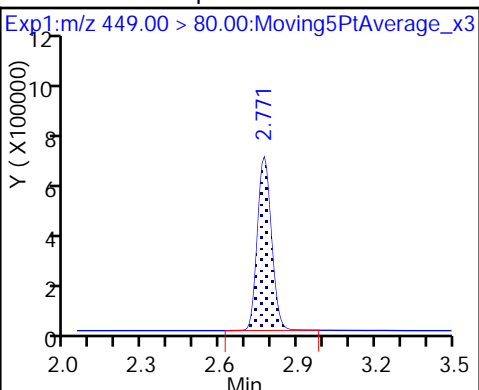
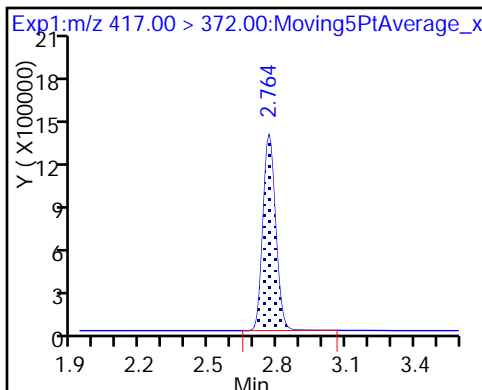
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

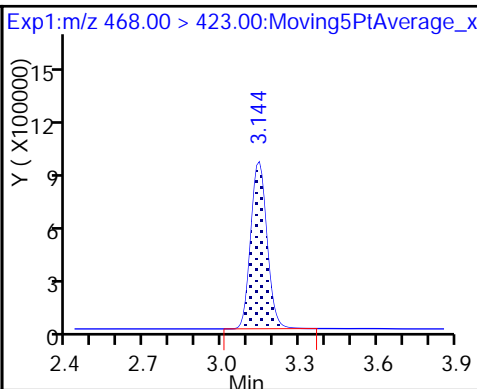
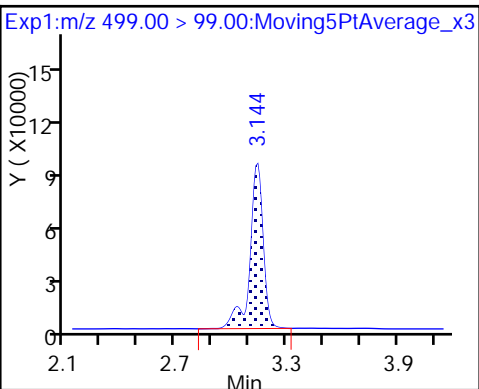
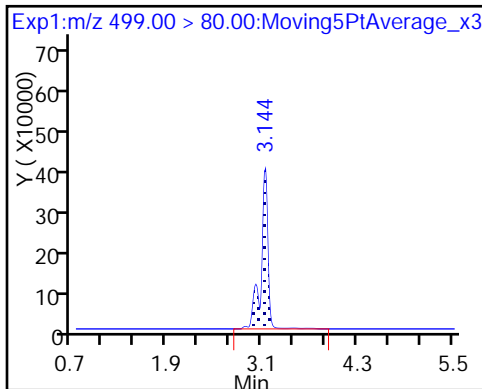
20 Perfluorononanoic acid



17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

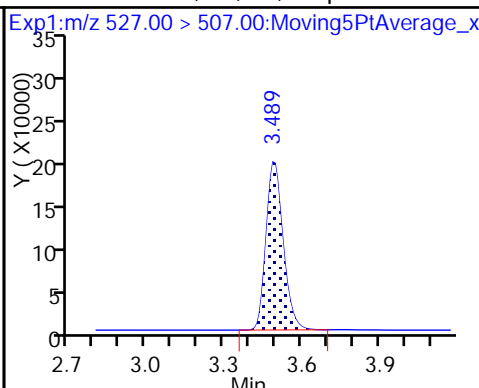
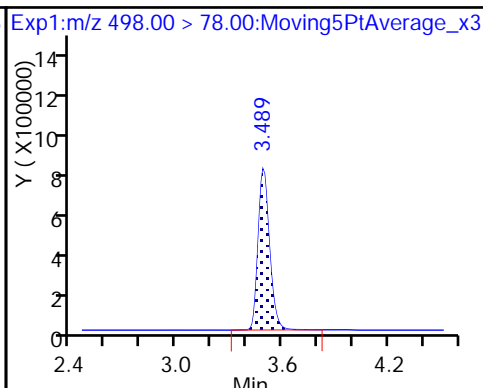
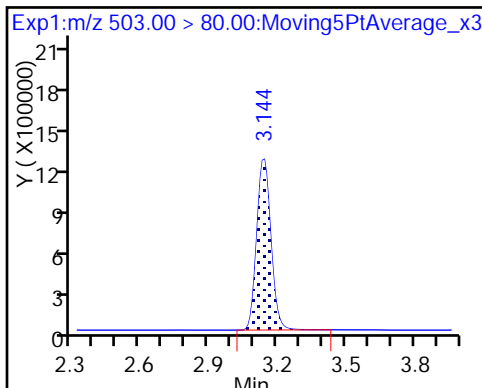
D 19 13C5 PFNA



D 18 13C4 PFOS

22 Perfluorooctane Sulfonamide

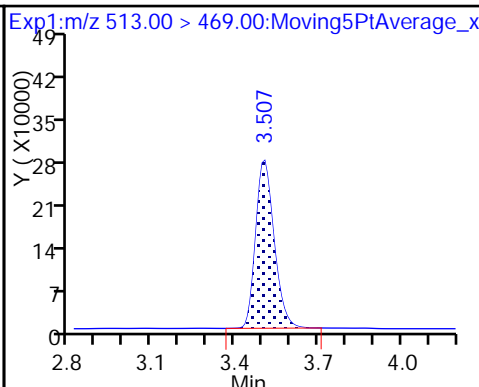
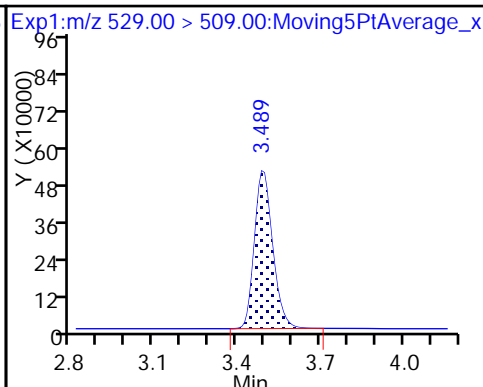
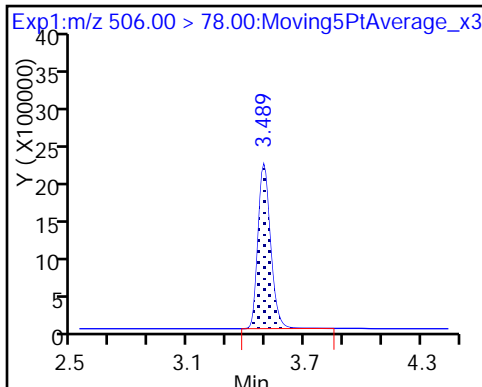
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 21 13C8 FOSA

D 26 M2-8:2FTS

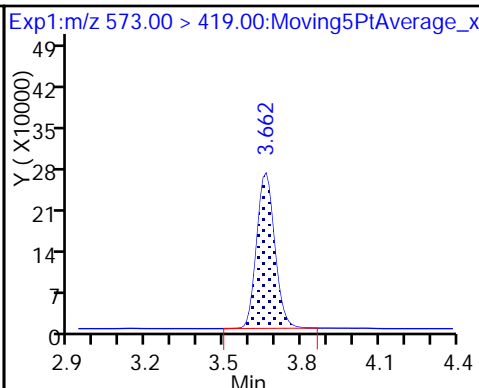
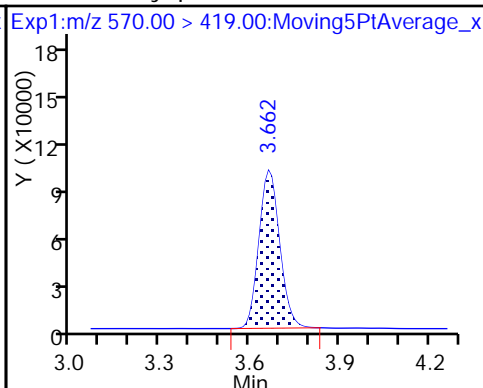
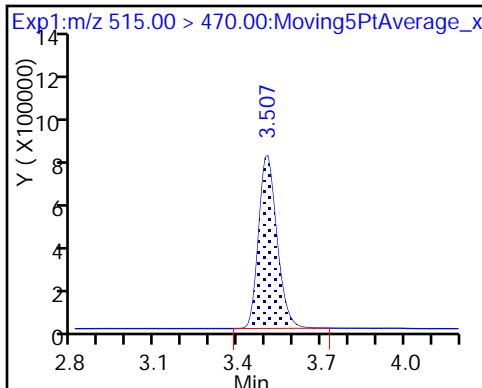
24 Perfluorodecanoic acid



D 23 13C2 PFDA

28 N-methyl perfluorooctane sulfonamide

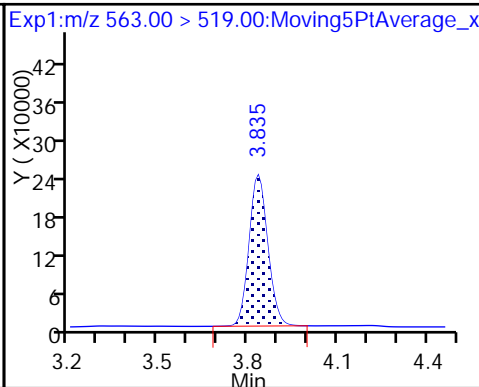
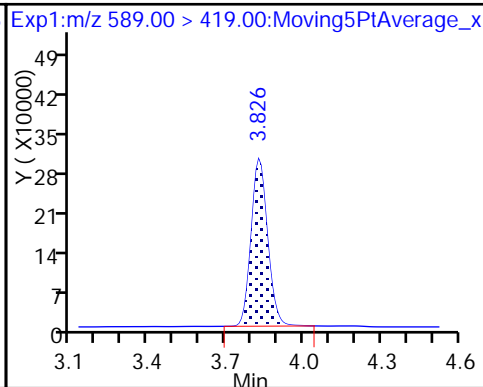
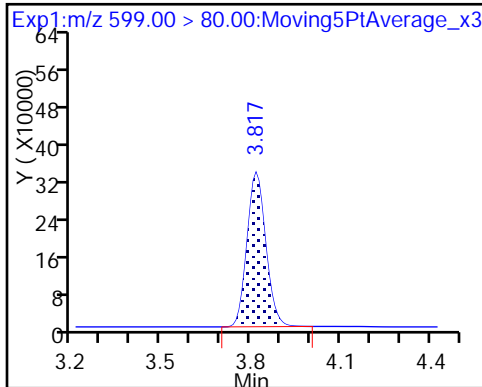
D 27 d3-NMeFOSAA



29 Perfluorodecane Sulfonic acid

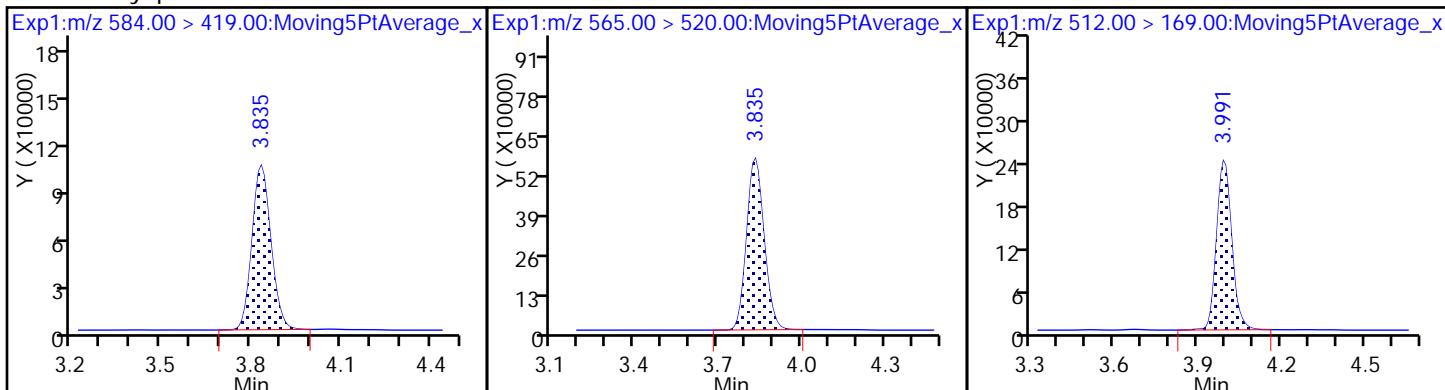
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

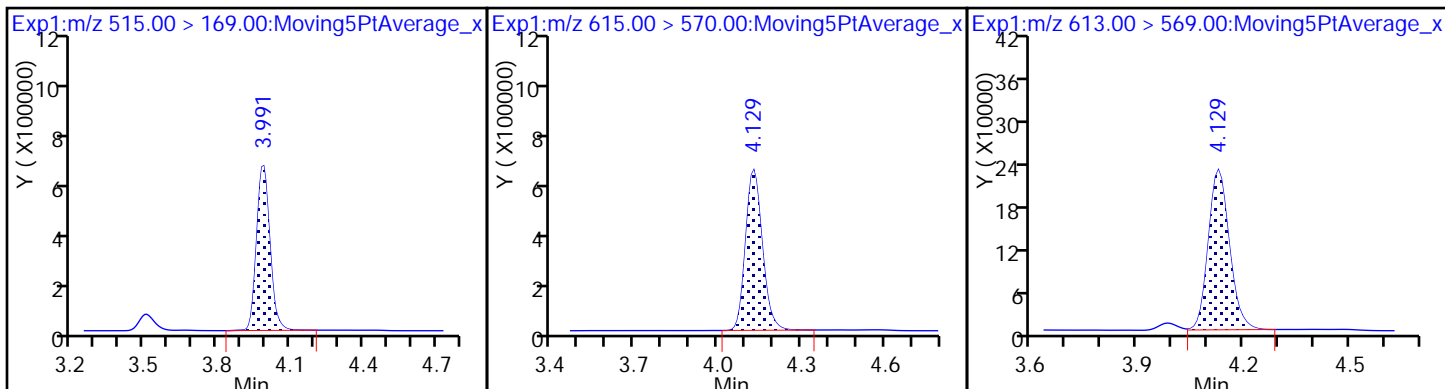
35 MeFOSA



D 34 d-N-MeFOSA-M

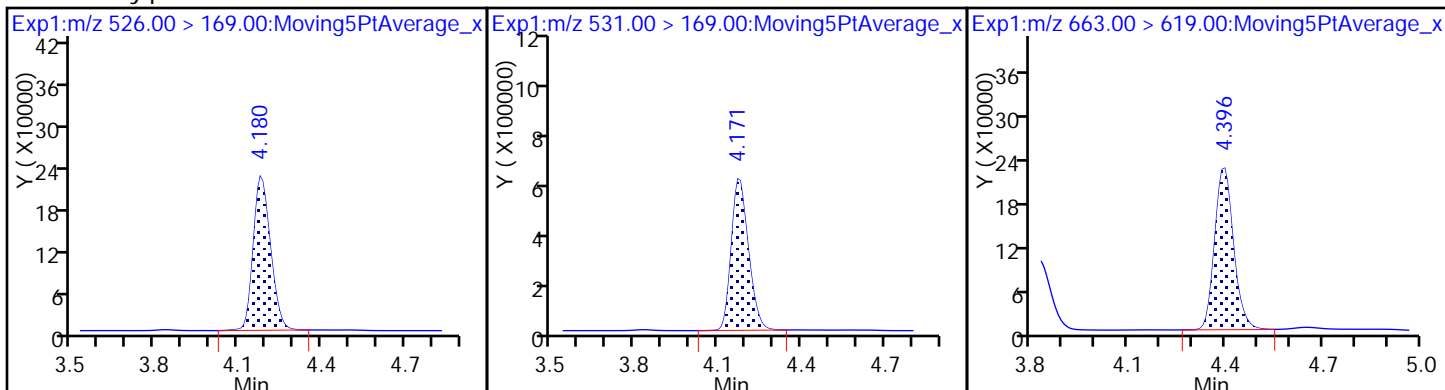
D 36 13C2 PFDaA

37 Perfluorododecanoic acid



39 N-ethylperfluoro-1-octanesulfonami D 38 d-N-EtFOSA-M

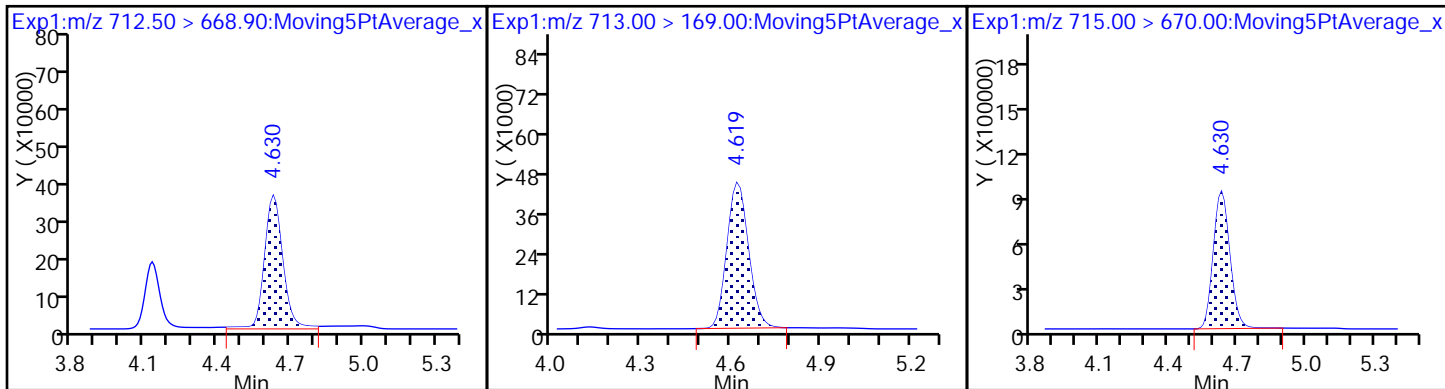
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

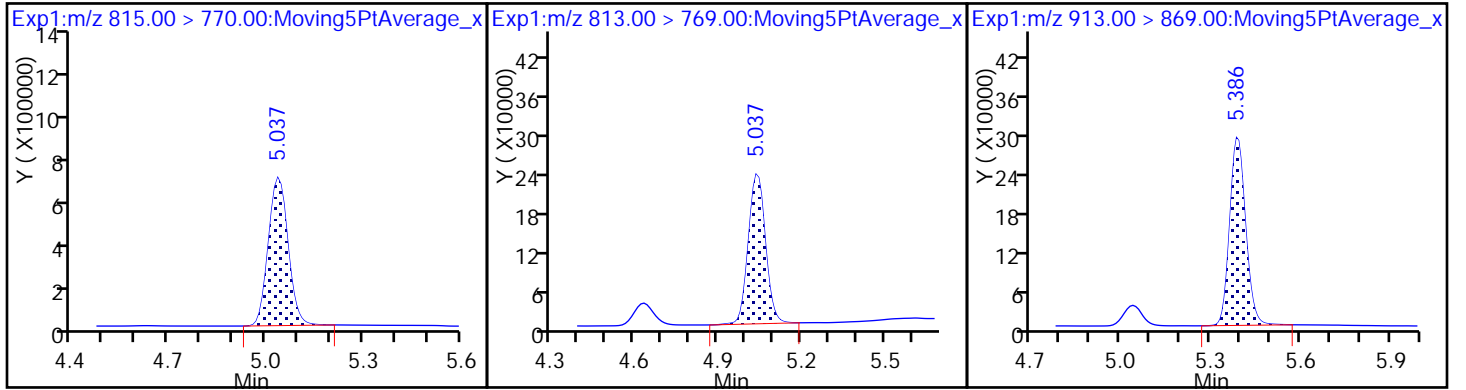
D 43 13C2-PFTeDA



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/12 Calibration Date: 07/27/2017 22:04
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9072 | | 51.4 | 50.0 | 2.9 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 0.9625 | | 46.2 | 50.0 | -7.6 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.409 | | 41.8 | 44.2 | -5.4 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9321 | | 48.9 | 50.0 | -2.1 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9586 | | 46.7 | 50.0 | -6.6 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 0.9797 | | 41.2 | 45.5 | -9.4 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8372 | | 44.3 | 47.4 | -6.5 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.047 | | 49.1 | 50.0 | -1.8 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.132 | | 48.0 | 47.6 | 0.9 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.996 | | 48.9 | 50.0 | -2.2 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 0.9886 | | 43.4 | 46.4 | -6.5 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.8990 | | 47.3 | 47.9 | -1.3 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.8953 | | 49.6 | 50.0 | -0.7 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.8951 | | 45.7 | 50.0 | -8.6 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.8872 | | 48.7 | 50.0 | -2.5 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6080 | | 47.1 | 48.2 | -2.3 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8020 | | 47.2 | 50.0 | -5.5 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 0.9802 | | 47.7 | 50.0 | -4.6 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8862 | | 48.2 | 50.0 | -3.5 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9512 | | 51.2 | 50.0 | 2.4 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9042 | | 48.8 | 50.0 | -2.5 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.9157 | | 53.8 | 50.0 | 7.6 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.898 | | 49.4 | 50.0 | -1.2 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.999 | | 62.4 | 50.0 | 24.8 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 1.014 | | 66.3 | 50.0 | 32.5* | 25.0 |
| 13C4 PFBA | Ave | 156025 | 179234 | | 57.4 | 50.0 | 14.9 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 135283 | | 61.2 | 50.0 | 22.4 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 120814 | | 59.7 | 50.0 | 19.4 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 111594 | | 66.6 | 50.0 | 33.1 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 160556 | | 55.3 | 47.3 | 16.8 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 57534 | | 57.5 | 47.5 | 21.0 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/12 Calibration Date: 07/27/2017 22:04
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 97244 | | 59.2 | 50.0 | 18.4 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 118951 | | 52.5 | 47.8 | 9.9 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 73728 | | 56.1 | 50.0 | 12.2 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 193888 | | 53.0 | 50.0 | 6.1 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 41121 | | 54.0 | 47.9 | 12.7 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 68227 | | 61.1 | 50.0 | 22.2 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 24675 | | 56.8 | 50.0 | 13.5 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 26593 | | 60.6 | 50.0 | 21.3 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 47865 | | 58.8 | 50.0 | 17.5 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 50676 | | 53.8 | 50.0 | 7.6 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 43800 | | 49.0 | 50.0 | -1.9 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 52177 | | 53.4 | 50.0 | 6.8 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 87657 | | 54.0 | 50.0 | 7.9 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 47512 | | 57.5 | 50.0 | 15.0 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_012.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 27-Jul-2017 22:04:44 ALS Bottle#: 32 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 28-Jul-2017 14:14:28 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: barnettj Date: 28-Jul-2017 13:34:24

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|--------|
| 2 Perfluorobutyric acid | 212.90 | > 169.00 | 1.565 | 1.565 | 0.0 | 1.000 | 8129760 | 51.4 | 103 | 2656 |
| D 1 13C4 PFBA | 217.00 | > 172.00 | 1.565 | 1.565 | 0.0 | | 8961709 | 57.4 | 115 | 15932 |
| 4 Perfluoropentanoic acid | 262.90 | > 219.00 | 1.784 | 1.784 | 0.0 | 1.000 | 6510567 | 46.2 | 92.4 | 2827 |
| D 3 13C5-PFPeA | 267.90 | > 223.00 | 1.784 | 1.784 | 0.0 | | 6764156 | 61.2 | 122 | 39059 |
| D 47 13C3-PFBS | 301.90 | > 83.00 | 1.802 | 1.802 | 0.0 | | 158228 | NC | | 5086 |
| 5 Perfluorobutanesulfonic acid | 298.90 | > 80.00 | 1.812 | 1.812 | 0.0 | 1.000 | 10001760 | 41.8 | 94.6 | 307213 |
| | 298.90 | > 99.00 | 1.812 | 1.812 | 0.0 | 1.000 | 4099686 | 2.44(0.00-0.00) | | 59522 |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 | > 307.00 | 2.020 | 2.020 | 0.0 | 1.000 | 2500617 | 44.7 | 95.8 | 27706 |
| 6 Perfluorohexanoic acid | 313.00 | > 269.00 | 2.054 | 2.054 | 0.0 | 1.000 | 5630291 | 48.9 | 97.9 | 7304 |
| D 7 13C2 PFHxA | 315.00 | > 270.00 | 2.054 | 2.054 | 0.0 | | 6040702 | 59.7 | 119 | 20966 |
| 10 Perfluoroheptanoic acid | 363.00 | > 319.00 | 2.385 | 2.385 | 0.0 | 1.000 | 5348463 | 46.7 | 93.4 | 3203 |
| D 9 13C4-PFHpA | 367.00 | > 322.00 | 2.385 | 2.385 | 0.0 | | 5579681 | 66.6 | 133 | 13250 |
| 8 Perfluorohexanesulfonic acid | 399.00 | > 80.00 | 2.401 | 2.401 | 0.0 | 1.000 | 7156691 | 41.2 | 90.6 | 4100 |
| D 11 18O2 PFHxS | 403.00 | > 84.00 | 2.401 | 2.401 | 0.0 | | 7594307 | 55.3 | 117 | 15861 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|------|-----------------|-------|
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.711 | 2.711 | 0.0 | 1.000 | 2283167 | 44.3 | 93.5 | 16085 |
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.711 | 2.711 | 0.0 | | 2732877 | 57.5 | 121 | 14183 |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.733 | 2.733 | 0.0 | | 4816859 | 50.0 | 100 | 14872 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.740 | 2.740 | 0.0 | 1.000 | 5091667 | 49.1 | 98.2 | 755 |
| | 413.00 | > 169.00 | 2.740 | 2.740 | 0.0 | 1.000 | 2814521 | | 1.81(0.90-1.10) | 6894 |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.740 | 2.740 | 0.0 | | 4862177 | 59.2 | 118 | 17384 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.747 | 2.747 | 0.0 | 1.000 | 6408962 | 48.0 | 101 | 22849 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.111 | 3.111 | 0.0 | 1.000 | 3670939 | 48.9 | 97.8 | 5415 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.111 | 3.111 | 0.0 | 1.000 | 5456171 | 43.4 | 93.5 | 9846 |
| | 499.00 | > 99.00 | 3.111 | 3.111 | 0.0 | 1.000 | 1088019 | | 5.01(0.90-1.10) | 5200 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.111 | 3.111 | 0.0 | | 3686424 | 56.1 | 112 | 10212 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.111 | 3.111 | 0.0 | | 5685875 | 52.5 | 110 | 16712 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.454 | 3.454 | 0.0 | 1.000 | 8679319 | 49.6 | 99.3 | 12260 |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.454 | 3.454 | 0.0 | 1.000 | 1770732 | 47.3 | 98.7 | 12698 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.454 | 3.454 | 0.0 | | 9694422 | 53.0 | 106 | 15183 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.454 | 3.454 | 0.0 | | 1969678 | 54.0 | 113 | 11819 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.474 | 3.474 | 0.0 | 1.000 | 3053630 | 45.7 | 91.4 | 5510 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.474 | 3.474 | 0.0 | | 3411325 | 61.1 | 122 | 7235 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.631 | 3.631 | 0.0 | 1.000 | 1094539 | 48.7 | 97.5 | 5507 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.631 | 3.631 | 0.0 | | 1233751 | 56.8 | 114 | 4623 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.777 | 3.777 | 0.0 | 1.000 | 3485633 | 47.1 | 97.7 | 7297 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.787 | 3.787 | 0.0 | | 1329627 | 60.6 | 121 | 2607 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.797 | 3.797 | 0.0 | 1.000 | 2345746 | 47.7 | 95.4 | 2789 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.797 | 3.797 | 0.0 | 1.003 | 1066341 | 47.2 | 94.5 | 5938 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.797 | 3.797 | 0.0 | | 2393227 | 58.8 | 118 | 6789 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|------|-------|
| 35 MeFOSA | 512.00 > 169.00 | 3.956 | 3.956 | 0.0 | 1.000 | 2245347 | 48.2 | 96.5 | 3929 | |
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.956 | 3.956 | 0.0 | | 2533775 | 53.8 | 108 | 724 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.088 | 4.088 | 0.0 | | 2189986 | 49.0 | 98.1 | 2790 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.096 | 4.096 | 0.0 | 1.000 | 2083168 | 51.2 | 102 | 1389 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.147 | 4.147 | 0.0 | 1.000 | 2358947 | 48.8 | 97.5 | 3613 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.147 | 4.147 | 0.0 | | 2608860 | 53.4 | 107 | 3154 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.358 | 4.358 | 0.0 | 1.000 | 2005335 | 53.8 | 108 | 507 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.593 | 4.593 | 0.0 | 1.000 | 4156979 | 49.4 | 98.8 | 207 | |
| | 713.00 > 169.00 | 4.593 | 4.593 | 0.0 | 1.000 | 552098 | 7.53(0.00-0.00) | | 2835 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.593 | 4.593 | 0.0 | | 4382835 | 54.0 | 108 | 3423 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.005 | 5.005 | 0.0 | | 2375604 | 57.5 | 115 | 1696 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.015 | 5.015 | 0.0 | 1.000 | 2186959 | 62.4 | 125 | 356 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.365 | 5.365 | 0.0 | 1.000 | 2220674 | 66.3 | 133 | 515 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_012.d

Injection Date: 27-Jul-2017 22:04:44

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

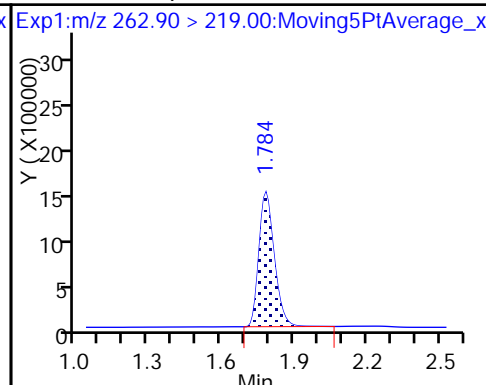
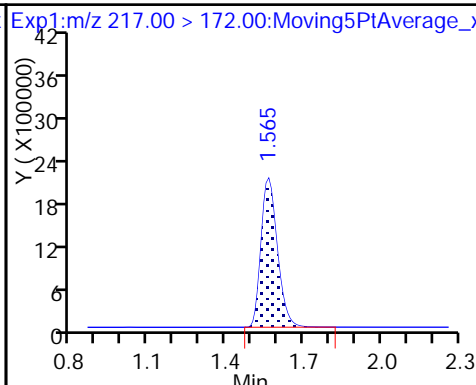
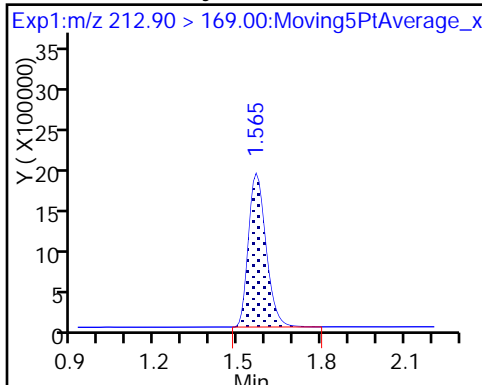
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

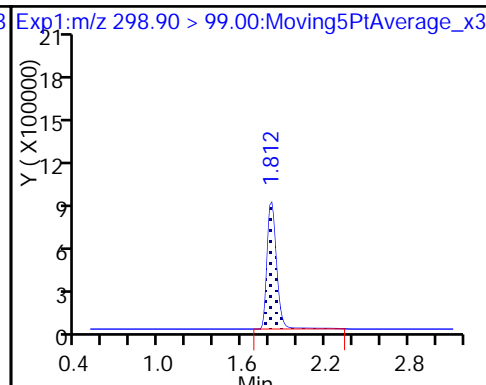
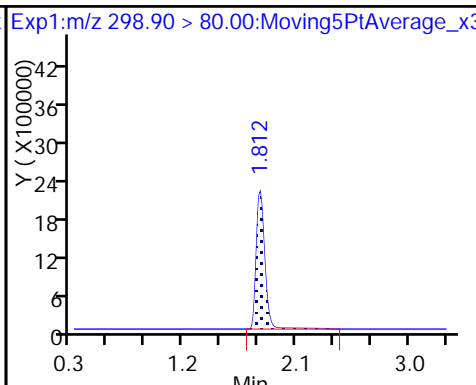
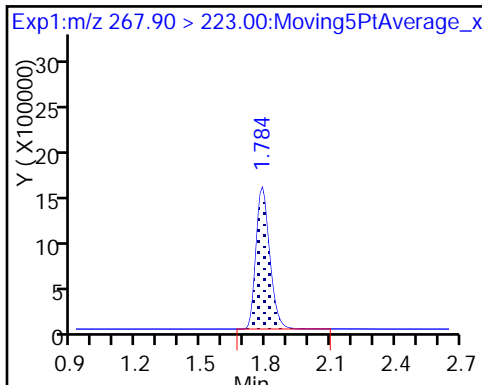
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

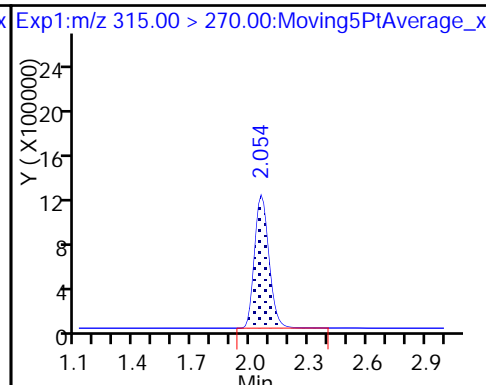
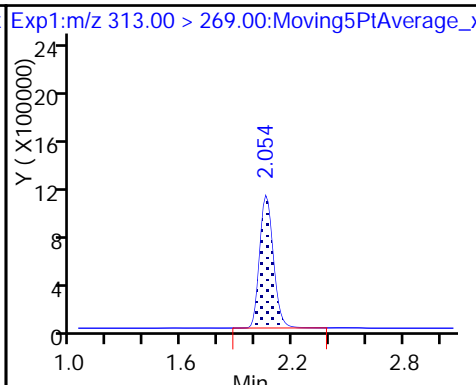
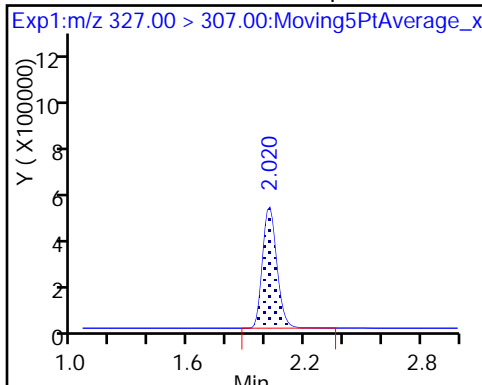
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

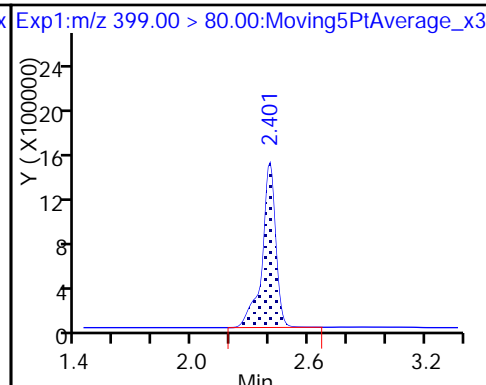
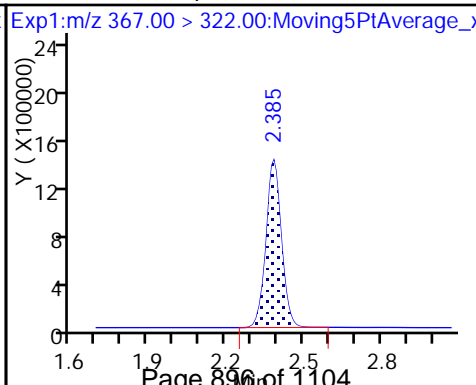
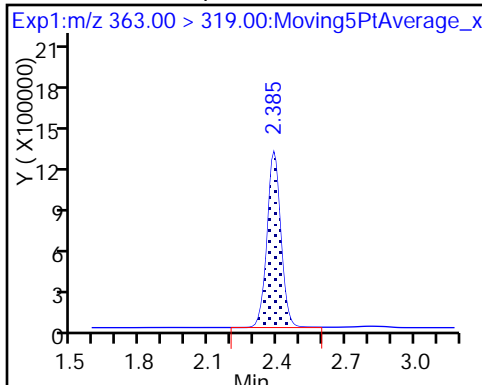
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

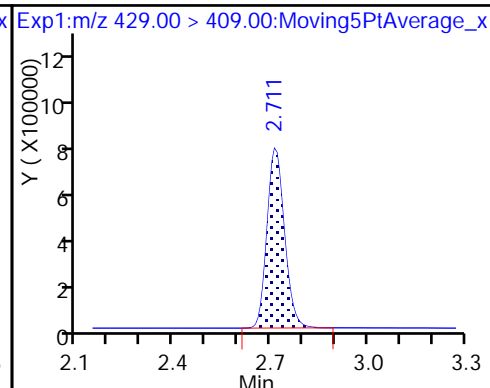
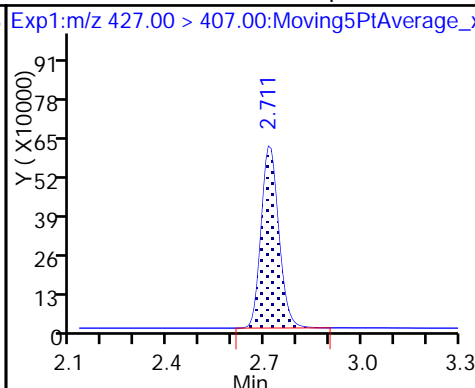
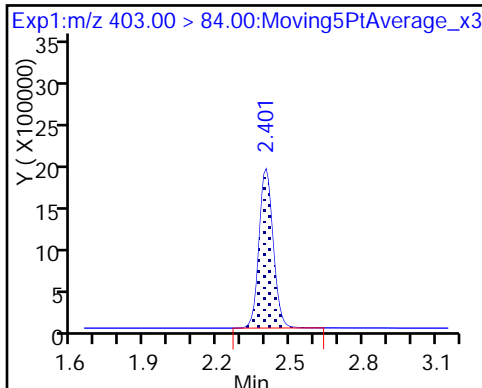
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

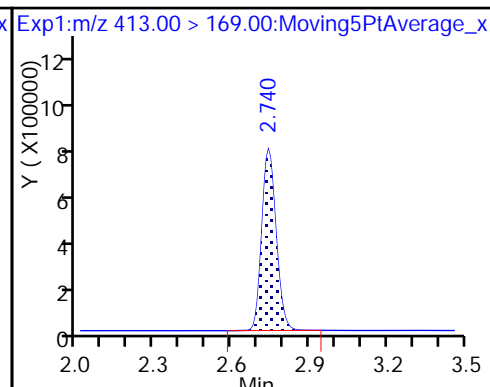
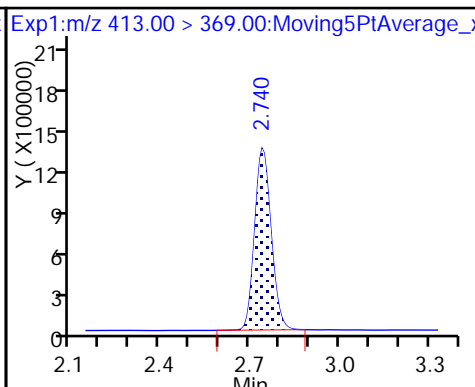
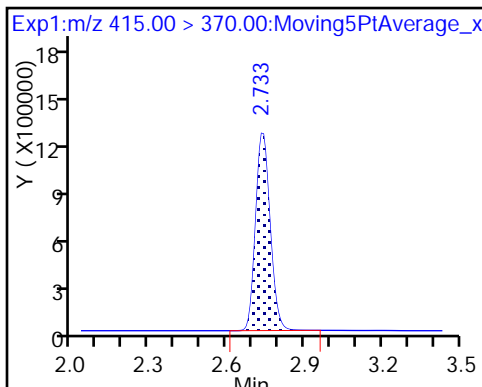
D 12 M2-6:2FTS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

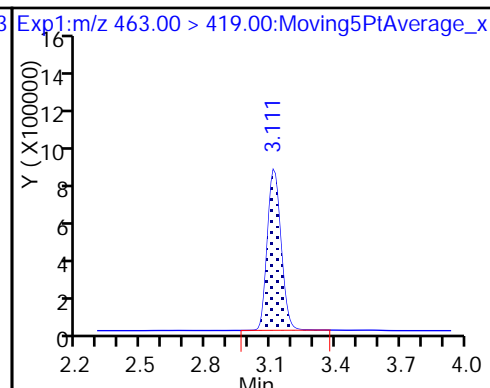
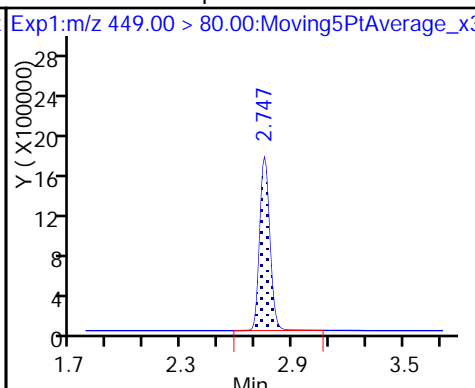
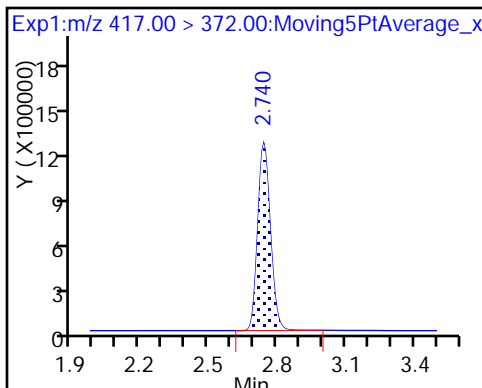
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

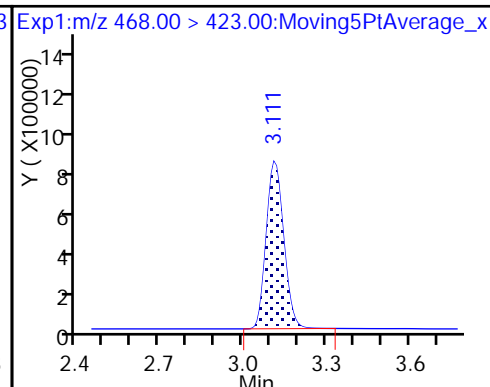
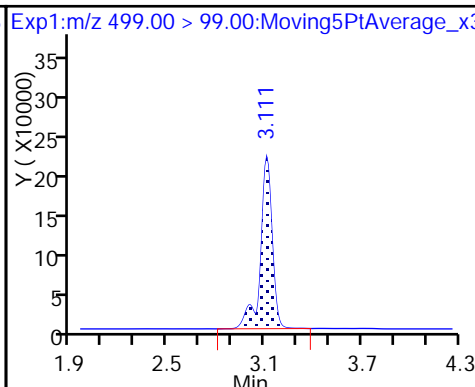
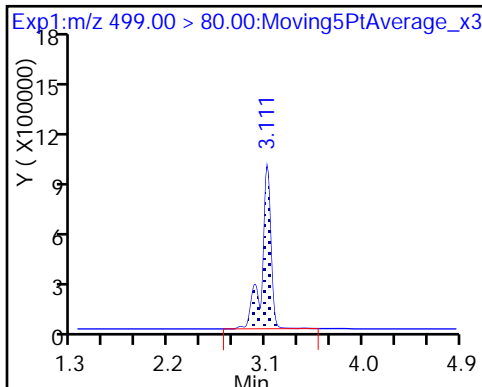
20 Perfluorononanoic acid



17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

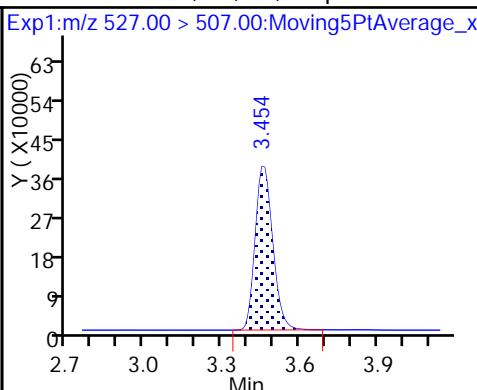
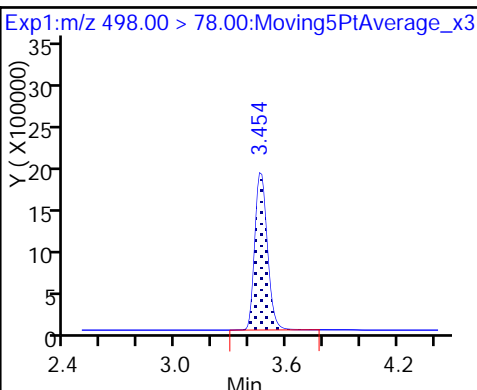
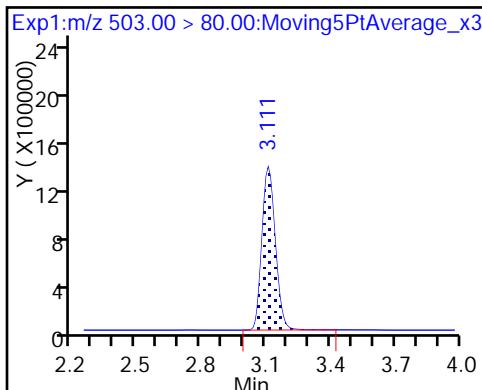
D 19 13C5 PFNA



D 18 13C4 PFOS

22 Perfluorooctane Sulfonamide

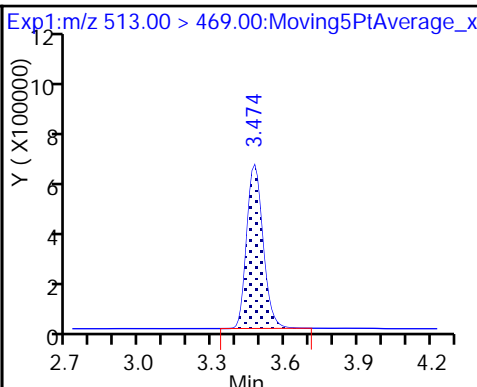
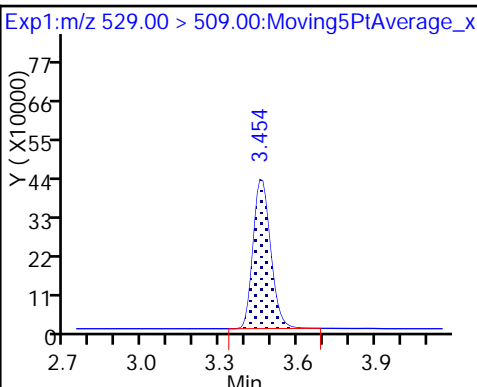
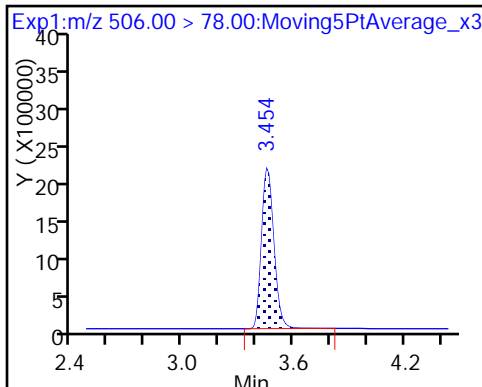
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 21 13C8 FOSA

D 26 M2-8:2FTS

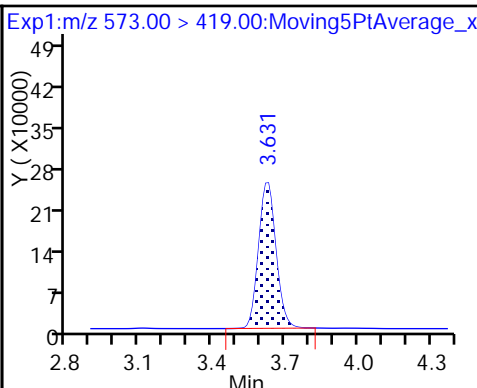
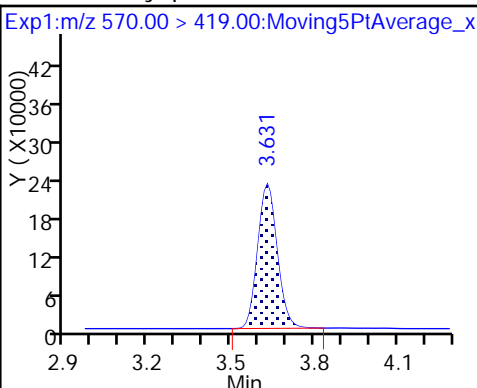
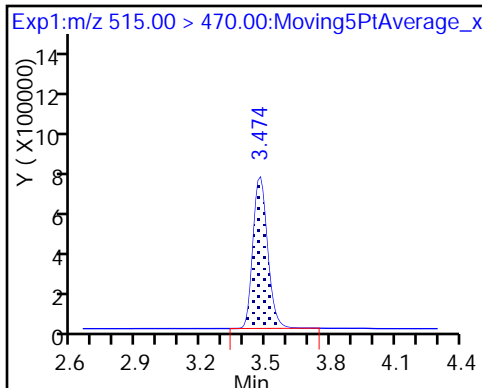
24 Perfluorodecanoic acid



D 23 13C2 PFDA

28 N-methyl perfluorooctane sulfonamide

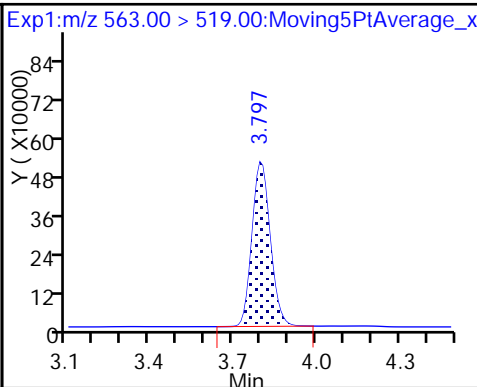
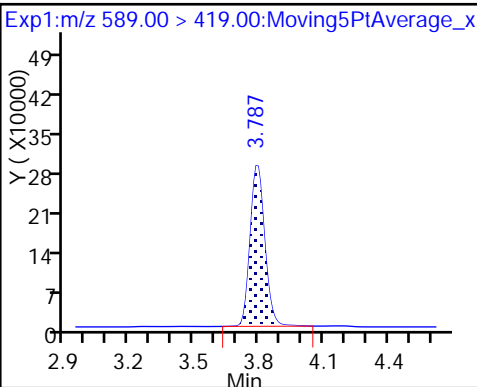
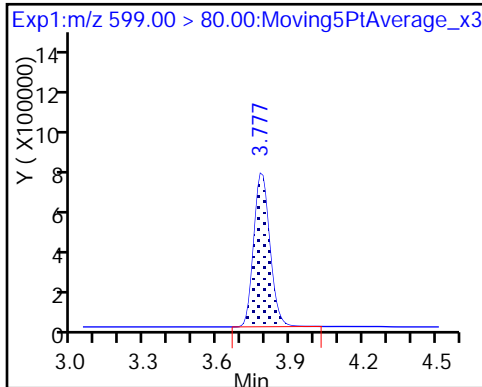
D 27 d3-NMeFOSAA



29 Perfluorodecane Sulfonic acid

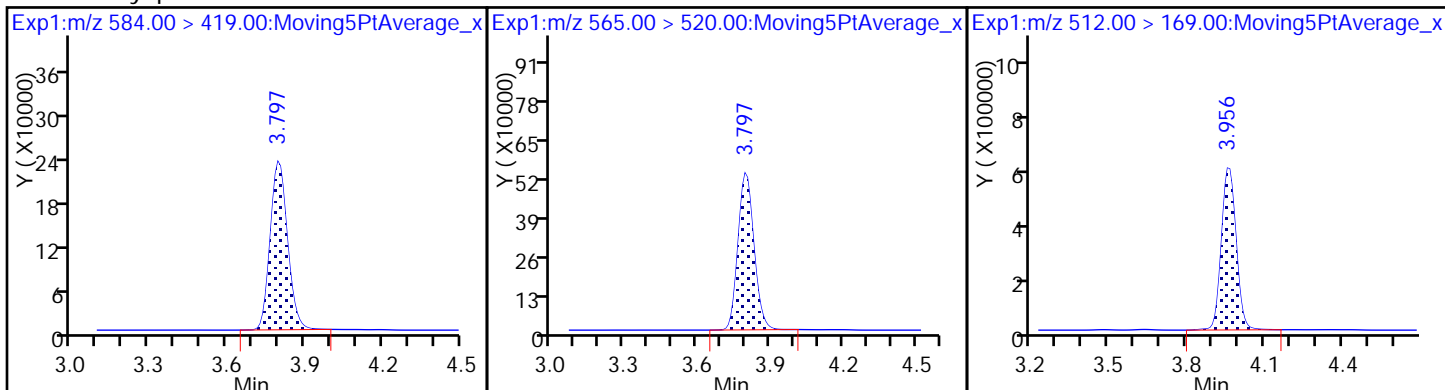
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

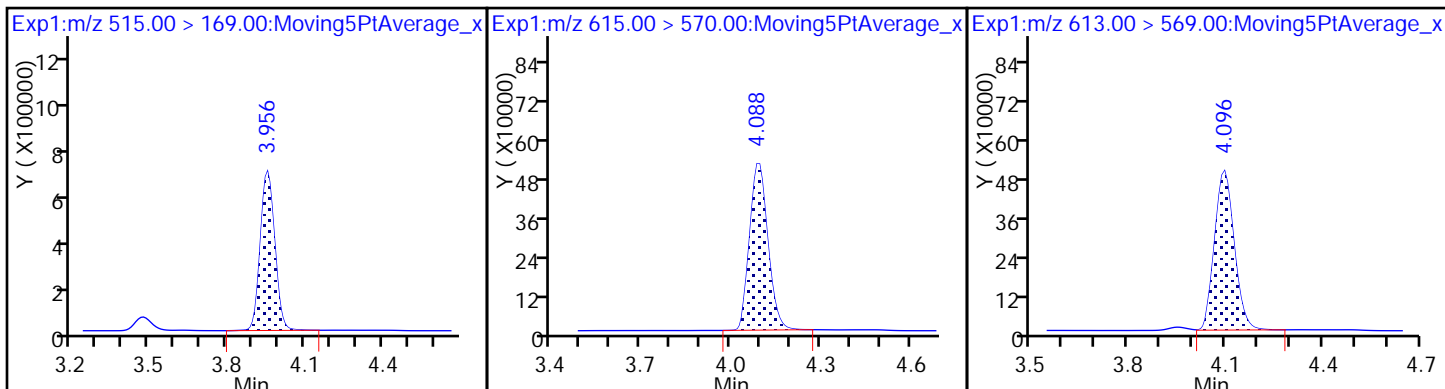
35 MeFOSA



D 34 d-N-MeFOSA-M

D 36 13C2 PFDaA

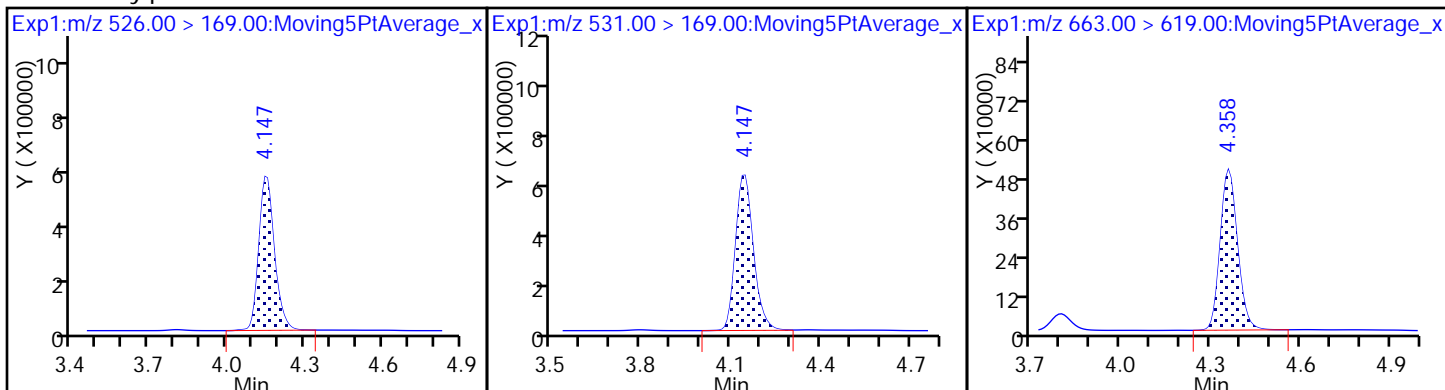
37 Perfluorododecanoic acid



39 N-ethylperfluoro-1-octanesulfonami D

38 d-N-EtFOSA-M

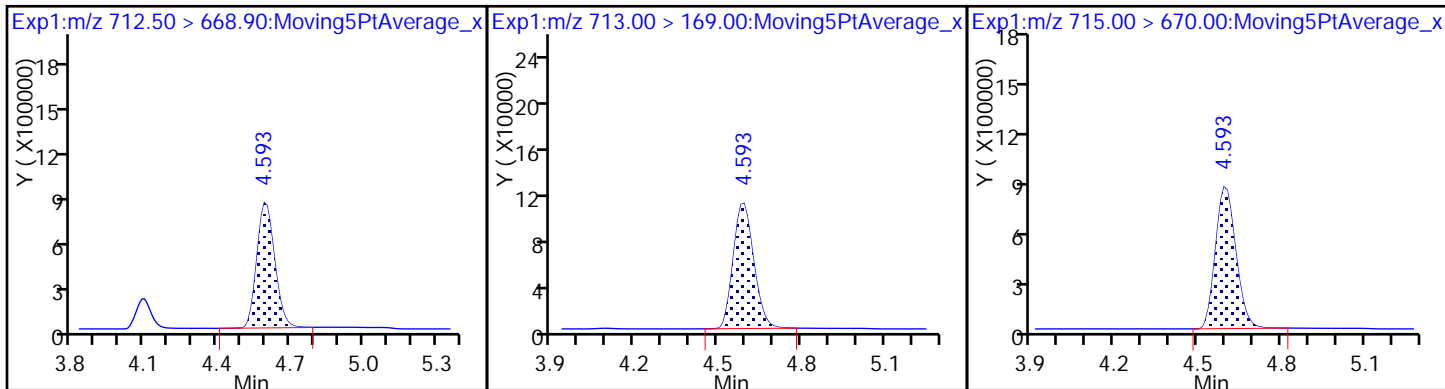
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

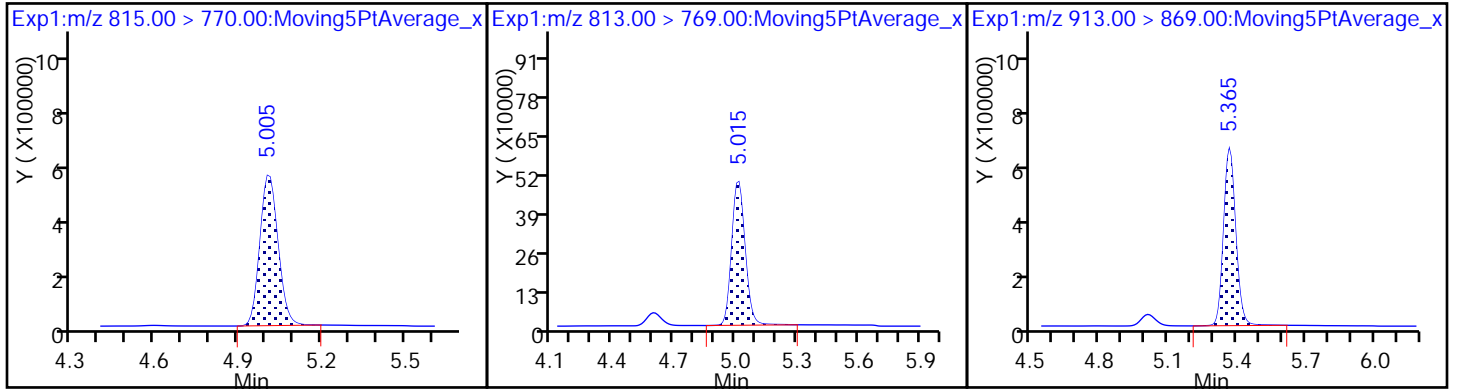
D 43 13C2-PFTeDA



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/15 Calibration Date: 07/27/2017 22:25
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_015.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9649 | | 21.9 | 20.0 | 9.4 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.041 | | 20.0 | 20.0 | -0.1 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.545 | | 18.3 | 17.7 | 3.7 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9278 | | 19.5 | 20.0 | -2.6 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.007 | | 19.6 | 20.0 | -1.9 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 0.9914 | | 16.7 | 18.2 | -8.4 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8626 | | 18.3 | 19.0 | -3.7 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.240 | | 21.0 | 19.0 | 10.5 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.052 | | 19.7 | 20.0 | -1.4 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9756 | | 19.2 | 20.0 | -4.2 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.052 | | 18.5 | 18.6 | -0.5 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9022 | | 19.0 | 19.2 | -0.9 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9255 | | 20.5 | 20.0 | 2.6 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9566 | | 19.5 | 20.0 | -2.4 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9192 | | 20.2 | 20.0 | 1.0 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6224 | | 19.3 | 19.3 | -0.0 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8608 | | 20.3 | 20.0 | 1.4 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.088 | | 21.1 | 20.0 | 5.6 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.9093 | | 19.8 | 20.0 | -1.0 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9671 | | 20.8 | 20.0 | 4.1 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9434 | | 20.3 | 20.0 | 1.7 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8846 | | 20.8 | 20.0 | 3.9 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.824 | | 19.0 | 20.0 | -5.1 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.9356 | | 23.0 | 20.0 | 14.9 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.9256 | | 24.2 | 20.0 | 21.0 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 204655 | | 65.6 | 50.0 | 31.2 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 147166 | | 66.6 | 50.0 | 33.2 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 140270 | | 69.3 | 50.0 | 38.7 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 125528 | | 74.9 | 50.0 | 49.8 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 184352 | | 63.4 | 47.3 | 34.1 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 63655 | | 63.6 | 47.5 | 33.8 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/15 Calibration Date: 07/27/2017 22:25
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_015.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 110027 | | 67.0 | 50.0 | 33.9 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 128018 | | 56.6 | 47.8 | 18.3 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 85832 | | 65.3 | 50.0 | 30.6 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 213697 | | 58.5 | 50.0 | 16.9 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 46996 | | 61.7 | 47.9 | 28.8 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 71382 | | 63.9 | 50.0 | 27.8 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 28005 | | 64.4 | 50.0 | 28.9 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 50596 | | 62.1 | 50.0 | 24.2 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 28897 | | 65.9 | 50.0 | 31.8 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 54532 | | 57.9 | 50.0 | 15.7 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 51382 | | 57.5 | 50.0 | 15.1 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 56408 | | 57.8 | 50.0 | 15.5 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 97684 | | 60.1 | 50.0 | 20.3 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 49721 | | 60.2 | 50.0 | 20.4 | 50.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_015.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 27-Jul-2017 22:25:26 ALS Bottle#: 31 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 28-Jul-2017 14:14:33 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK013

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|--------|-------|
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.562 | 1.565 | -0.003 | 1.000 | 3949416 | 21.9 | 109 | 1442 | |
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.562 | 1.565 | -0.003 | | 10232742 | 65.6 | 131 | 17884 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.781 | 1.784 | -0.003 | 1.000 | 3063572 | 20.0 | 99.9 | 1443 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.781 | 1.784 | -0.003 | | 7358315 | 66.6 | 133 | 52173 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.809 | 1.802 | 0.007 | | 176021 | NC | | 7858 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.809 | 1.812 | -0.003 | 1.000 | 5034311 | 18.3 | 104 | 180195 | |
| | 298.90 > 99.00 | 1.809 | 1.812 | -0.003 | 1.000 | 1828312 | 2.75(0.00-0.00) | | 5215 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.017 | 2.020 | -0.003 | 1.000 | 1132857 | 18.3 | 98.1 | 28206 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.051 | 2.054 | -0.003 | 1.000 | 2602698 | 19.5 | 97.4 | 4100 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.051 | 2.054 | -0.003 | | 7013501 | 69.3 | 139 | 23960 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.380 | 2.385 | -0.005 | 1.000 | 2526925 | 19.6 | 98.1 | 1834 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.380 | 2.385 | -0.005 | | 6276383 | 74.9 | 150 | 15006 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.396 | 2.401 | -0.005 | 1.000 | 3326313 | 16.7 | 91.6 | 2421 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.396 | 2.401 | -0.005 | | 8719865 | 63.4 | 134 | 13632 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.714 | 2.711 | 0.003 | 1.000 | 1041018 | 18.3 | 96.3 | 18775 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|-----------------|-------|-------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.714 | 2.711 | 0.003 | 3023605 | 63.6 | 134 | 15316 | |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.735 | 2.733 | 0.002 | 5410039 | 50.0 | 100 | 16315 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.743 | 2.740 | 0.003 | 2313939 | 19.7 | 98.6 | 382 | |
| | 413.00 | > 169.00 | 2.743 | 2.740 | 0.003 | 1286751 | 1.80(0.90-1.10) | | 4925 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.735 | 2.740 | -0.005 | 5501366 | 67.0 | 134 | 17477 | |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.743 | 2.747 | -0.004 | 3021620 | 21.0 | 111 | 13999 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.112 | 3.111 | 0.001 | 1674803 | 19.2 | 95.8 | 3306 | |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.112 | 3.111 | 0.001 | 2500385 | 18.5 | 99.5 | 6325 | |
| | 499.00 | > 99.00 | 3.112 | 3.111 | 0.001 | 533340 | 4.69(0.90-1.10) | | 15186 | |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.112 | 3.111 | 0.001 | 4291592 | 65.3 | 131 | 11294 | |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.112 | 3.111 | 0.001 | 6119259 | 56.6 | 118 | 21289 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.460 | 3.454 | 0.006 | 3955356 | 20.5 | 103 | 12983 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | 527.00 | > 507.00 | 3.460 | 3.454 | 0.006 | 812381 | 19.0 | 99.1 | 9635 | |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.460 | 3.454 | 0.006 | 10684835 | 58.5 | 117 | 19168 | |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.460 | 3.454 | 0.006 | 2251085 | 61.7 | 129 | 16032 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.469 | 3.474 | -0.005 | 1365671 | 19.5 | 97.6 | 4565 | |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.469 | 3.474 | -0.005 | 3569086 | 63.9 | 128 | 6928 | |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.629 | 3.631 | -0.002 | 514828 | 20.2 | 101 | 5357 | |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.629 | 3.631 | -0.002 | 1400240 | 64.4 | 129 | 7138 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.786 | 3.777 | 0.009 | 1536105 | 19.3 | 100.0 | 7259 | |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.796 | 3.787 | 0.009 | 1444864 | 65.9 | 132 | 2153 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.796 | 3.797 | -0.001 | 1101270 | 21.1 | 106 | 1642 | |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.796 | 3.797 | -0.001 | 497477 | 20.3 | 101 | 3949 | |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.796 | 3.797 | -0.001 | 2529814 | 62.1 | 124 | 5823 | |
| 35 MeFOSA | 512.00 | > 169.00 | 3.957 | 3.956 | 0.001 | 991698 | 19.8 | 99.0 | 4159 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|------|-------|
| D 34 d-N-MeFOSA-M | 515.00 > 169.00 | 3.957 | 3.956 | 0.001 | 2726617 | 57.9 | | 116 | 717 | |
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.091 | 4.088 | 0.003 | 2569117 | 57.5 | | 115 | 2836 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.091 | 4.096 | -0.005 | 993875 | 20.8 | | 104 | 710 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.151 | 4.147 | 0.004 | 1064311 | 20.3 | | 102 | 4126 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.142 | 4.147 | -0.005 | 2820380 | 57.8 | | 116 | 3193 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.354 | 4.358 | -0.004 | 909017 | 20.8 | | 104 | 195 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.595 | 4.593 | 0.002 | 1874083 | 19.0 | | 94.9 | 91.4 | |
| | 713.00 > 169.00 | 4.584 | 4.593 | -0.009 | 237333 | | 7.90(0.00-0.00) | | 1950 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.595 | 4.593 | 0.002 | 4884179 | 60.1 | | 120 | 4161 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.005 | 5.005 | 0.0 | 2486038 | 60.2 | | 120 | 1569 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.005 | 5.015 | -0.010 | 961505 | 23.0 | | 115 | 153 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.366 | 5.365 | 0.001 | 951221 | 24.2 | | 121 | 227 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULLL-L4_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_015.d

Injection Date: 27-Jul-2017 22:25:26

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

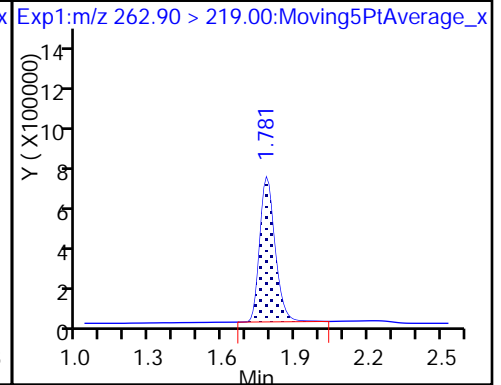
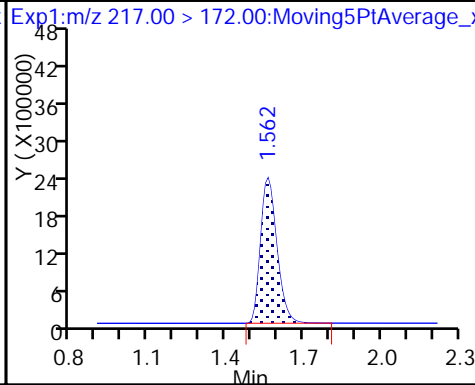
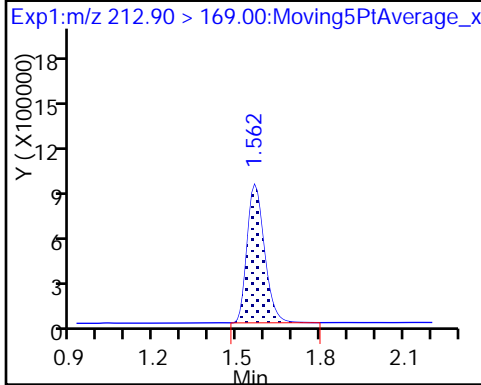
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

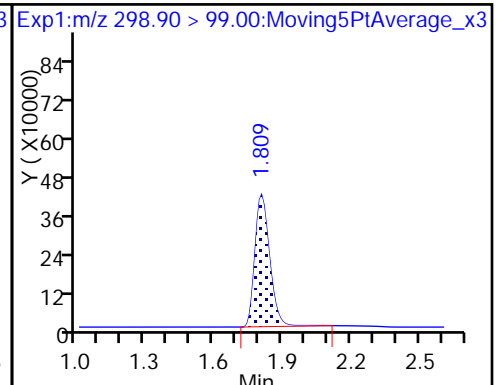
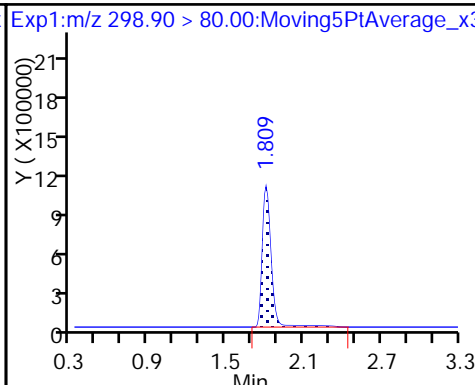
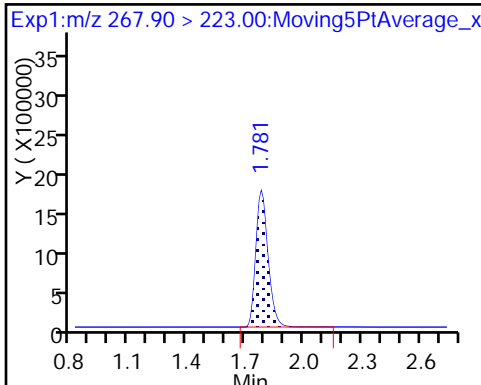
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

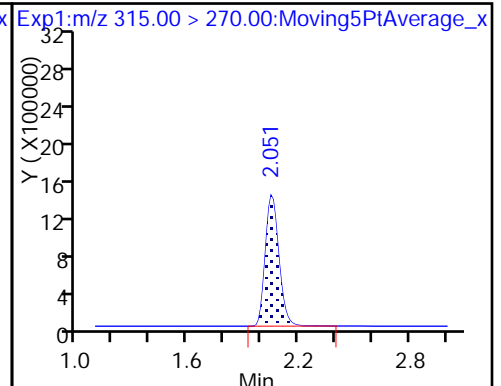
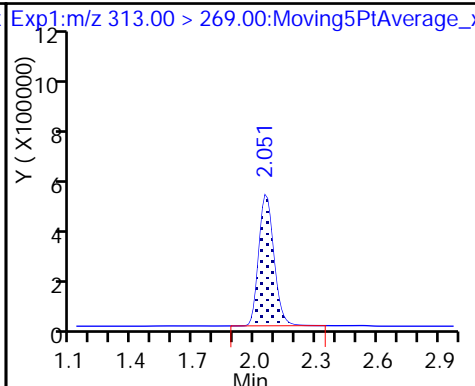
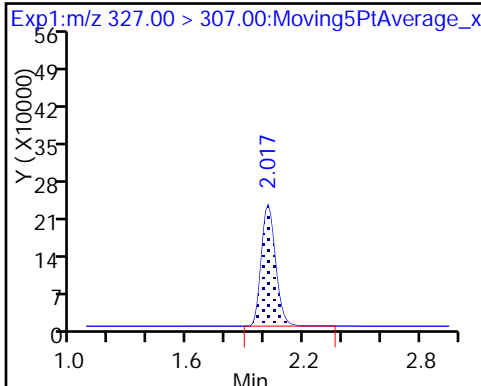
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorhexanoic acid

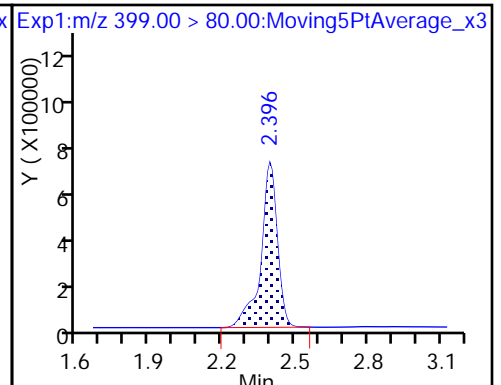
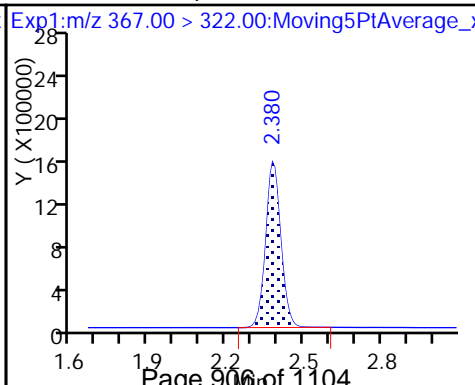
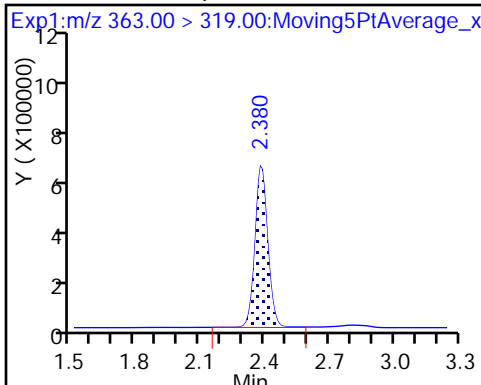
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

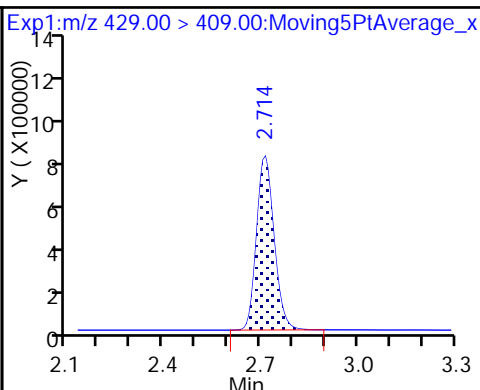
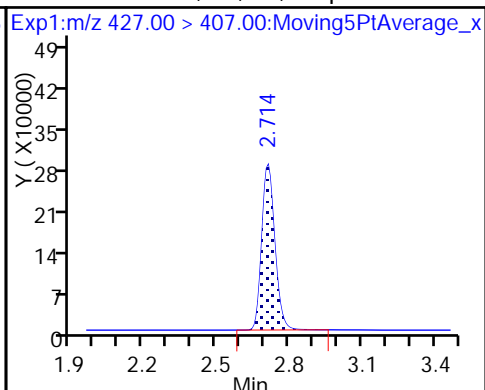
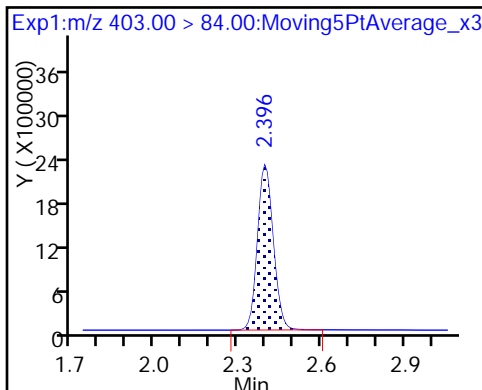
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

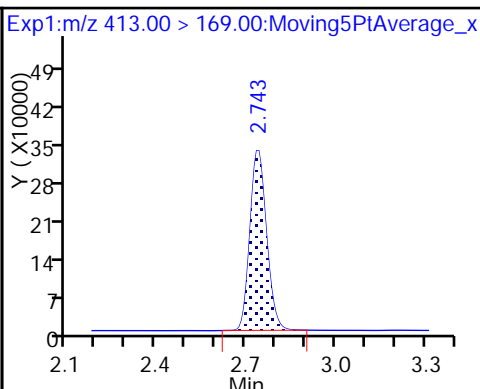
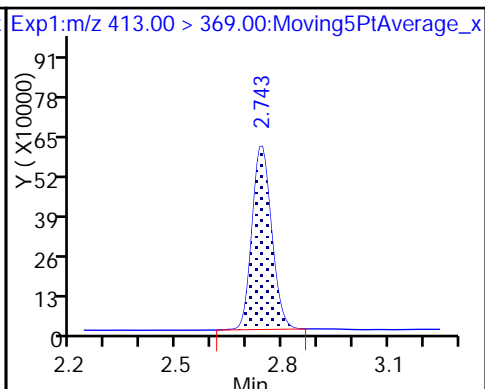
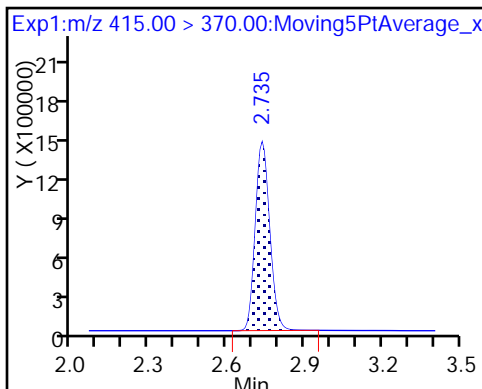
D 12 M2-6:2FTS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

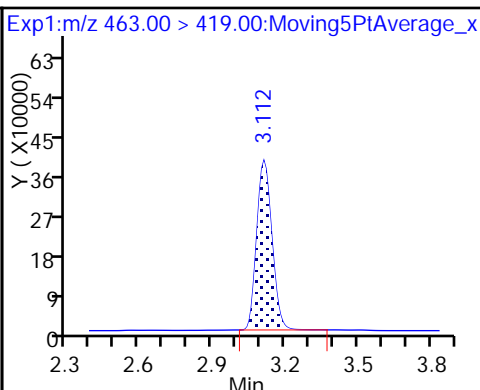
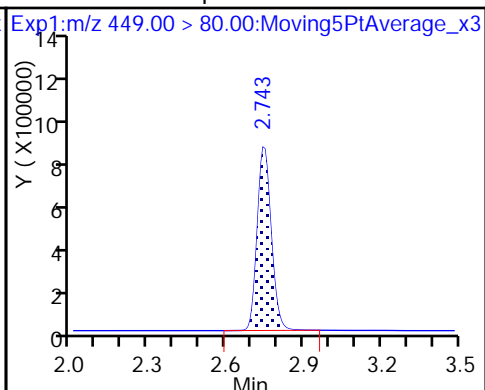
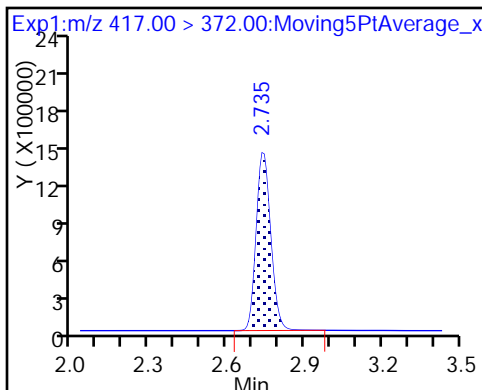
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

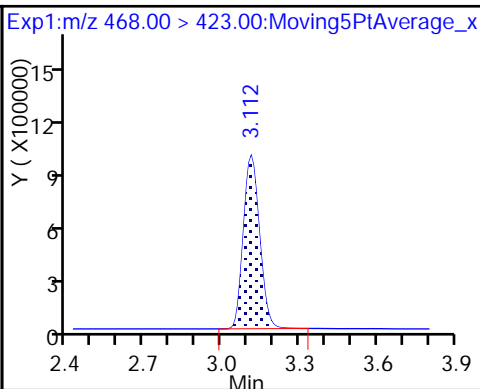
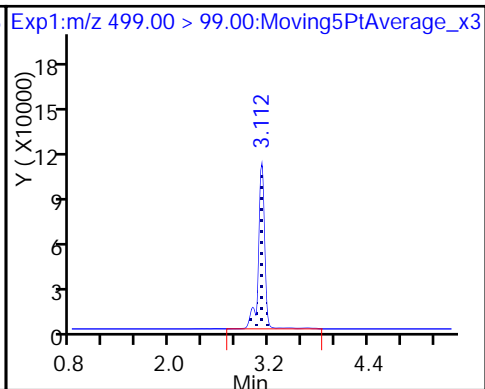
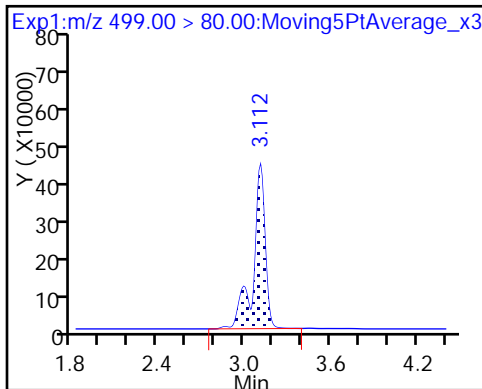
20 Perfluorononanoic acid



17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

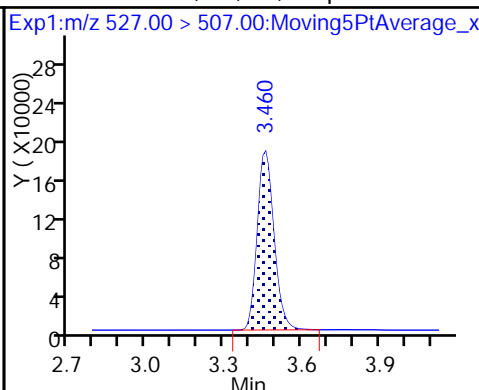
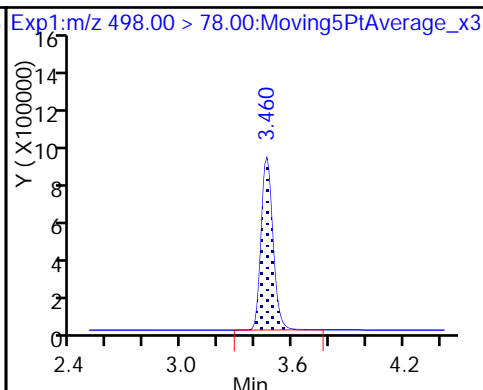
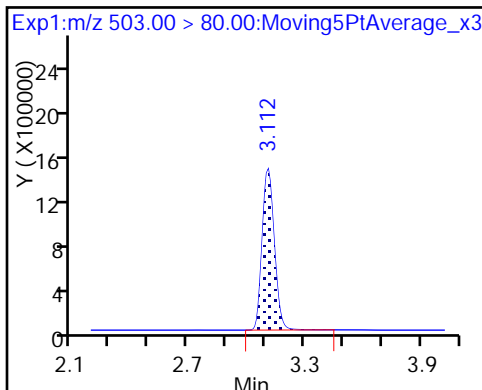
D 19 13C5 PFNA



D 18 13C4 PFOS

22 Perfluorooctane Sulfonamide

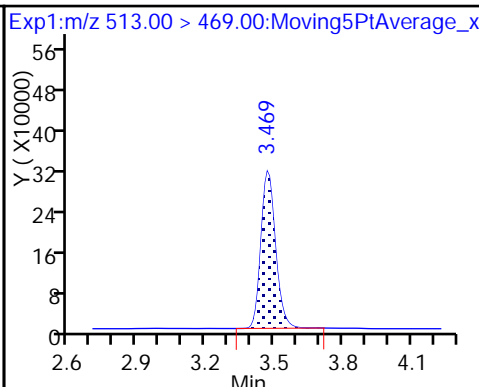
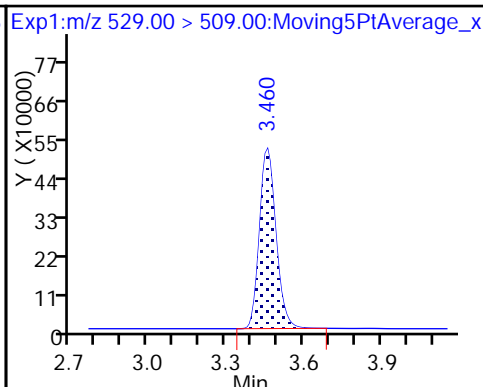
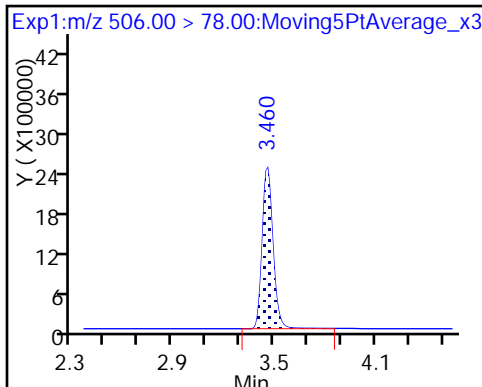
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 21 13C8 FOSA

D 26 M2-8:2FTS

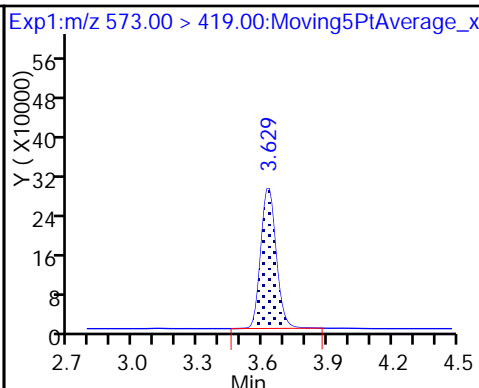
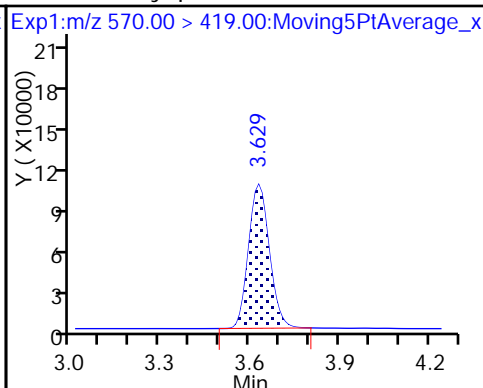
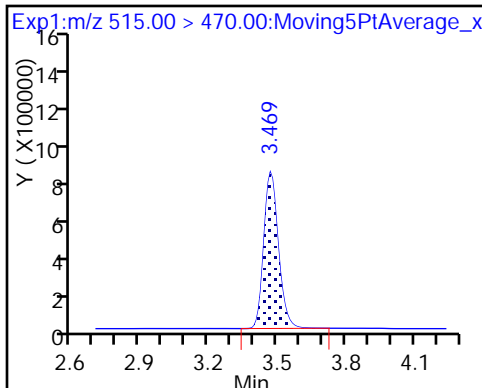
24 Perfluorodecanoic acid



D 23 13C2 PFDA

28 N-methyl perfluorooctane sulfonamide

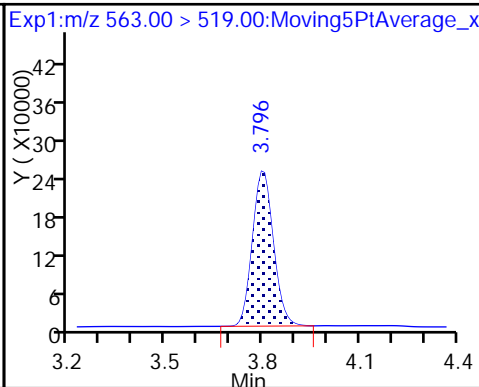
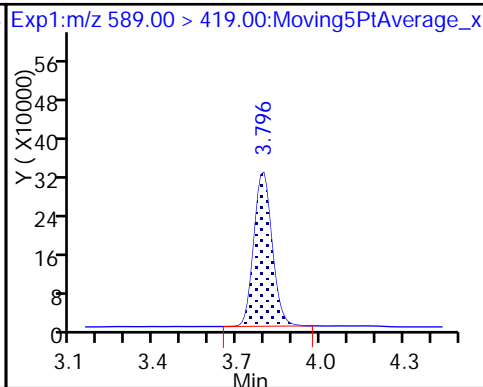
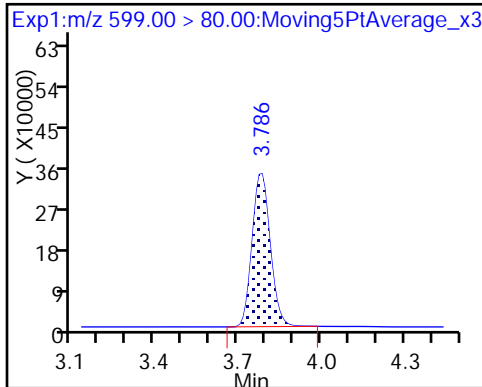
D 27 d3-NMeFOSAA



29 Perfluorodecane Sulfonic acid

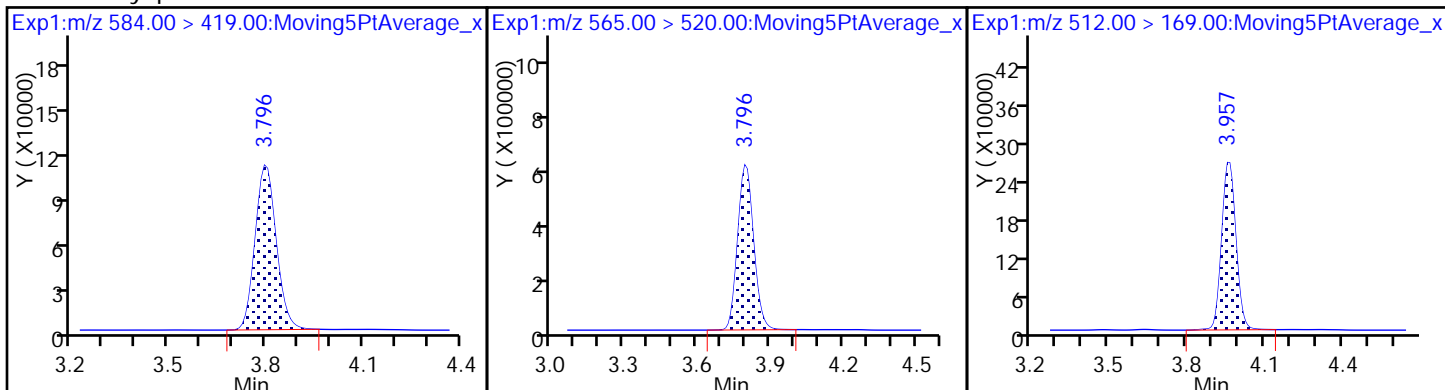
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

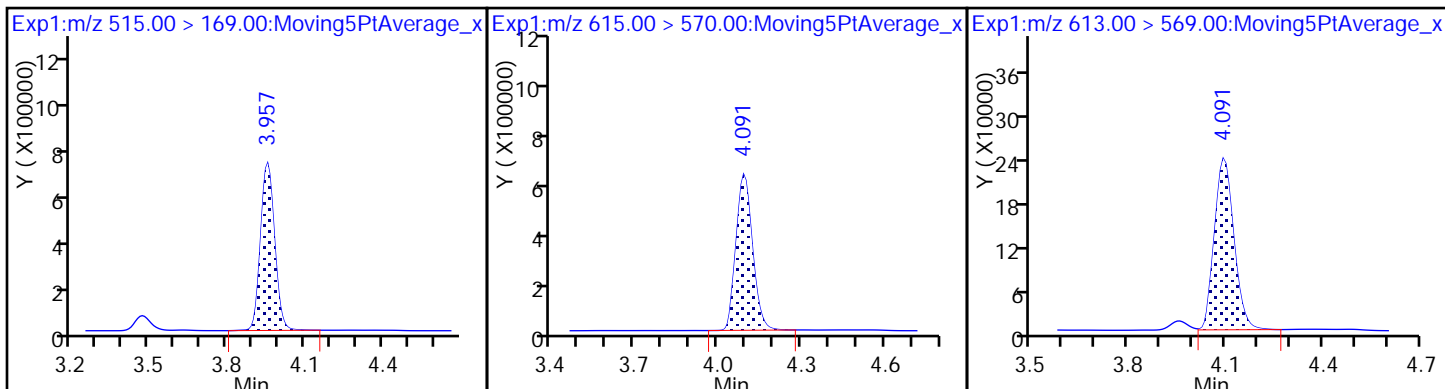
35 MeFOSA



D 34 d-N-MeFOSA-M

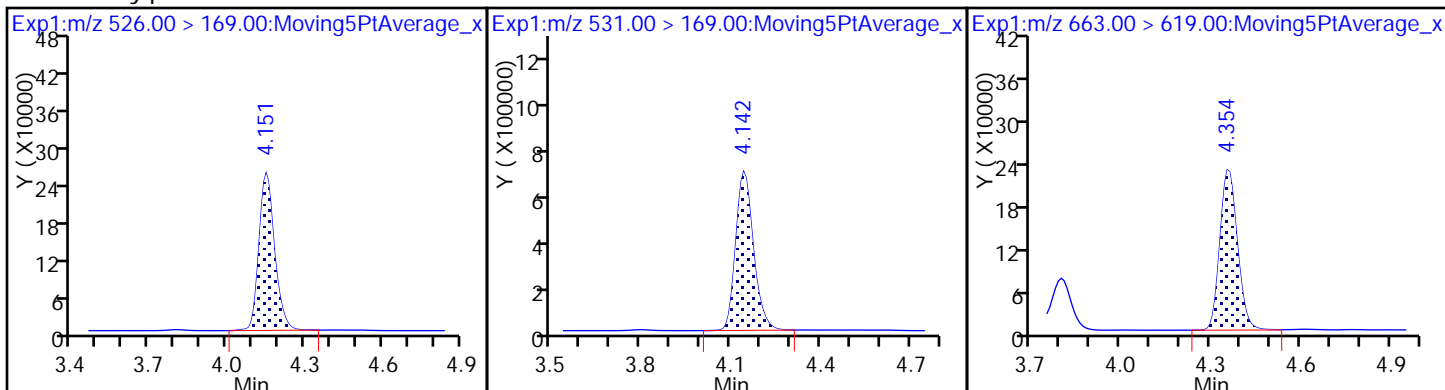
D 36 13C2 PFDaA

37 Perfluorododecanoic acid



39 N-ethylperfluoro-1-octanesulfonami D 38 d-N-EtFOSA-M

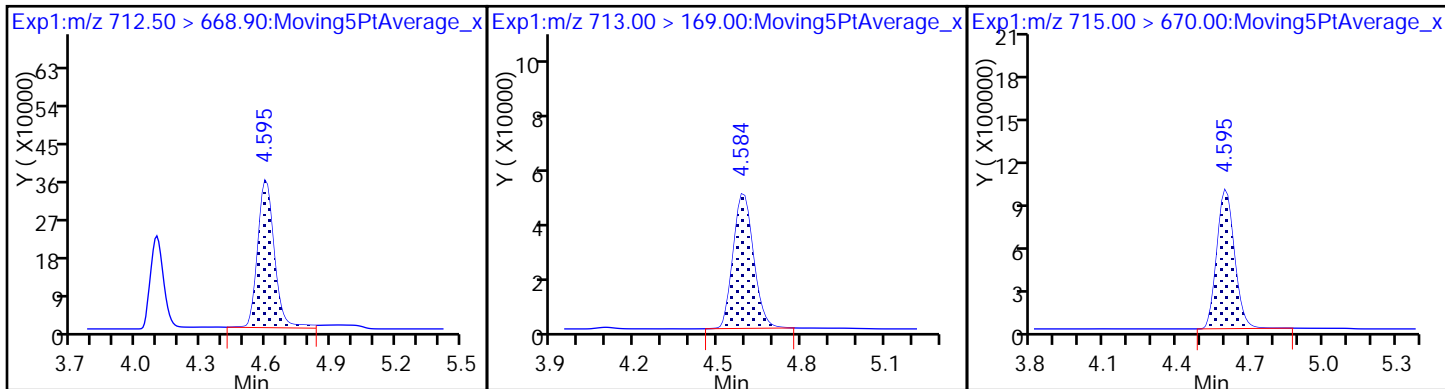
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

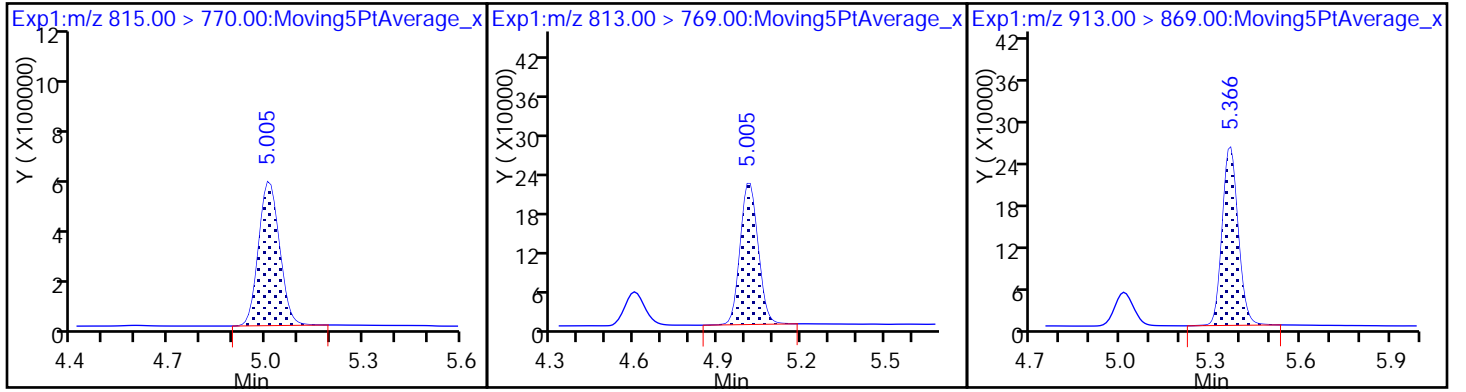
D 43 13C2-PFTeDA



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-174599/1-A
 Matrix: Water Lab File ID: 2017.07.21C_016.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 250 (mL) Date Analyzed: 07/21/2017 20:45
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|-----|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 1.0 | U M | 2.5 | 1.0 | 0.46 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 2.0 | U | 2.5 | 2.0 | 0.99 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 2.0 | U | 2.5 | 2.0 | 0.79 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 2.0 | U | 2.5 | 2.0 | 0.80 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 2.0 | U | 2.5 | 2.0 | 0.75 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 2.0 | U | 2.5 | 2.0 | 0.65 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1.0 | U | 2.5 | 1.0 | 0.44 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.5 | 2.0 | 0.75 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.5 | 2.0 | 0.58 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 0.631 | J | 2.5 | 2.0 | 0.55 |
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 0.711 | J M | 2.5 | 1.0 | 0.40 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 2.0 | U | 2.5 | 2.0 | 0.92 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 2.0 | U | 2.5 | 2.0 | 0.87 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 2.0 | U | 2.5 | 2.0 | 0.71 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 3.0 | U | 4.0 | 3.0 | 1.3 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 3.0 | U | 4.0 | 3.0 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.0 | U | 40 | 2.0 | 0.64 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-174599/1-A
 Matrix: Water Lab File ID: 2017.07.21C_016.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 250 (mL) Date Analyzed: 07/21/2017 20:45
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 47 | | 25-150 |
| STL00992 | 13C4 PFBA | 113 | | 25-150 |
| STL00993 | 13C2 PFHxA | 115 | | 25-150 |
| STL00990 | 13C4 PFOA | 136 | | 25-150 |
| STL00995 | 13C5 PFNA | 123 | | 25-150 |
| STL00996 | 13C2 PFDA | 138 | | 25-150 |
| STL00997 | 13C2 PFUnA | 137 | | 25-150 |
| STL00998 | 13C2 PFDoA | 114 | | 25-150 |
| STL00994 | 18O2 PFHxS | 111 | | 25-150 |
| STL00991 | 13C4 PFOS | 105 | | 25-150 |
| STL01892 | 13C4-PFHpA | 148 | | 25-150 |
| STL01893 | 13C5 PFPeA | 112 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d
 Lims ID: MB 320-174599/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 21-Jul-2017 20:45:25 ALS Bottle#: 13 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-174599/1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 16:31:26 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:05:11

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.528 | 1.537 | -0.009 | 10213420 | 56.7 | | 113 | 27420 | |
| 2 Perfluorobutyric acid | | | | | | | | | | M |
| 212.90 > 169.00 | 1.528 | 1.537 | -0.009 | 1.000 | 31366 | 0.1686 | | 9.6 | | M |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.727 | 1.727 | 0.0 | 6673673 | 55.8 | | 112 | 41748 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.745 | 1.755 | -0.010 | 168483 | NC | | | 5849 | |
| 5 Perfluorobutanesulfonic acid | | | | | | | | | | |
| 298.90 > 80.00 | 1.745 | 1.755 | -0.010 | 1.000 | 8417 | 0.0332 | | 6.4 | | |
| 298.90 > 99.00 | 1.745 | 1.755 | -0.010 | 1.000 | 7345 | | 1.15(0.00-0.00) | 5.0 | | |
| D 40 d-N-EtFOSE-M | 212.90 > 169.00 | 2.074 | 1.884 | 0.190 | 4343 | NC | | | 1.3 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | | | | | | | | | | |
| 327.00 > 307.00 | 1.948 | 1.960 | -0.012 | 1.000 | 1221 | NR | | | 63.5 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 1.983 | 1.994 | -0.011 | 6369807 | 57.7 | | 115 | 34313 | |
| 6 Perfluorohexanoic acid | | | | | | | | | | |
| 313.00 > 269.00 | 1.983 | 1.994 | -0.011 | 1.000 | 13855 | 0.1160 | | | 16.4 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.307 | 2.316 | -0.009 | 7192040 | 73.9 | | 148 | 31406 | |
| 10 Perfluoroheptanoic acid | | | | | | | | | | |
| 363.00 > 319.00 | 2.307 | 2.316 | -0.009 | 1.000 | 14842 | 0.1022 | | | 13.5 | |
| 8 Perfluorohexanesulfonic acid | | | | | | | | | | |
| 399.00 > 80.00 | 2.323 | 2.324 | -0.001 | 1.000 | 33121 | 0.1814 | | | 41.5 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.323 | 2.332 | -0.009 | 8442641 | 52.7 | | 111 | 33637 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | | | | | | | | | | |
| 427.00 > 407.00 | 2.638 | 2.634 | 0.004 | 1.000 | 52723 | NR | | | 2086 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| D 12 M2-6:2FTS | 429.00 | > 409.00 | 2.638 | 2.634 | 0.004 | 5769 | 0.1097 | 0.0 | 412 | |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.652 | 2.656 | -0.004 | 8235 | 50.0 | | 282 | |
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.659 | 2.656 | 0.003 | 5953513 | 67.8 | | 136 | 32917 |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.659 | 2.663 | -0.004 | 1.000 | 8586 | 0.0689 | | 2.1 |
| | 413.00 | > 169.00 | 2.667 | 2.663 | 0.003 | 1.003 | 6149 | 1.40(0.90-1.10) | | 40.1 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.667 | 2.670 | -0.004 | 1.000 | 4172 | 0.0286 | | 154 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.022 | 3.029 | -0.007 | 1.000 | 3609 | 0.0423 | | 7.9 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.030 | 3.029 | 0.001 | 5941715 | 50.3 | | 105 | 26977 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.030 | 3.029 | 0.001 | 4270711 | 61.6 | | 123 | 24088 |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.371 | 3.372 | -0.001 | 2655 | 0.0676 | 0.0 | 164 | |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.388 | 3.380 | 0.008 | 1.000 | 5023 | 0.0642 | | 20.1 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.388 | 3.380 | 0.008 | 4181338 | 69.1 | | 138 | 17186 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.388 | 3.388 | 0.0 | 4649190 | 23.7 | | 47.4 | 15503 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.388 | 3.388 | 0.0 | 1.000 | 8005 | 0.0932 | | 183 |
| 28 N-methyl perfluorooctane sulfonami | 570.00 | > 419.00 | 3.550 | 3.543 | 0.007 | 1.003 | 2737 | NR | | 26.8 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.540 | 3.543 | -0.003 | 8512 | 0.3877 | 0.0 | 177 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.696 | 3.690 | 0.006 | 1.000 | 4185 | 0.0529 | | 161 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.706 | 3.699 | 0.007 | 13953 | 0.6069 | 0.0 | 58.4 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.706 | 3.709 | -0.003 | 1.000 | 11495 | 0.0147 | | 22.7 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.716 | 3.709 | 0.007 | 1.003 | 4558 | NR | | 107 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.716 | 3.709 | 0.007 | 2873176 | 68.4 | | 137 | 9431 |
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.892 | 3.886 | 0.006 | 2064 | 0.0409 | 0.0 | 2.5 | |
| D 36 13C2 PFDoA | 615.00 | > 570.00 | 4.000 | 4.004 | -0.004 | 2478978 | 56.9 | | 114 | 4833 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.007 | 4.004 | 0.003 | 1.000 | 8006 | 0.1710 | | 22.0 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 38 d-N-EtFOSA-M | | | | | | | | | | |
| 531.00 > 169.00 | 4.083 | 4.072 | 0.011 | | 2540 | 0.0499 | | 0.0 | 72.1 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.269 | 4.266 | 0.003 | 1.000 | 13322 | 0.3157 | | | 4.1 | |
| D 43 13C2-PFTeDA | | | | | | | | | | |
| 715.00 > 670.00 | 4.500 | 4.498 | 0.002 | | 5852025 | 72.0 | | 144 | 87657 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | |
| 712.50 > 668.90 | 4.509 | 4.498 | 0.011 | 1.000 | 34289 | 0.3553 | | | 11.0 | M |
| 713.00 > 169.00 | 4.500 | 4.498 | 0.002 | 0.998 | 6115 | | 5.61(0.00-0.00) | | 294 | M |
| D 44 13C2-PFHxDA | | | | | | | | | | |
| 815.00 > 770.00 | 4.909 | 4.900 | 0.009 | | 2193110 | 51.6 | | 103 | 3009 | |
| 45 Perfluorohexadecanoic acid | | | | | | | | | | |
| 813.00 > 769.00 | 4.909 | 4.910 | -0.001 | 1.000 | 39824 | 0.1938 | | | 5.3 | |

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

NC - Not Calibrated

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d

Injection Date: 21-Jul-2017 20:45:25

Instrument ID: A8_N

Lims ID: MB 320-174599/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

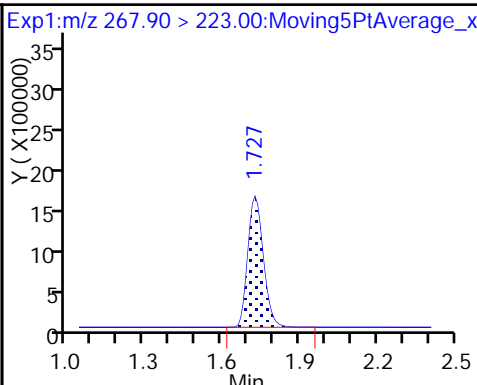
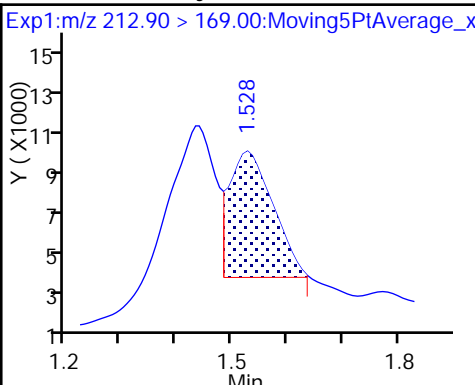
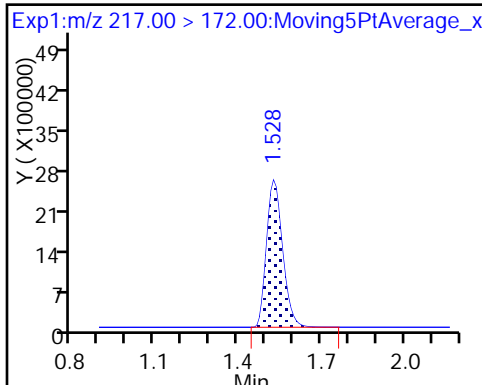
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

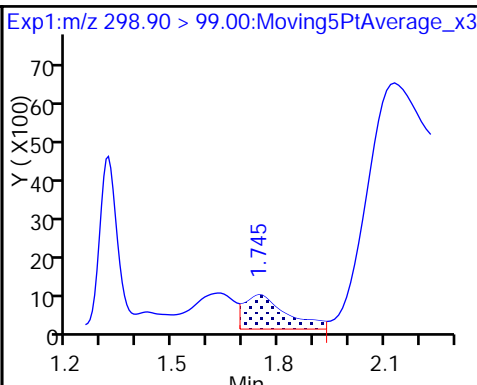
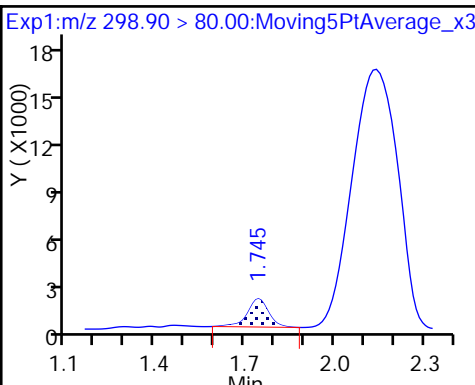
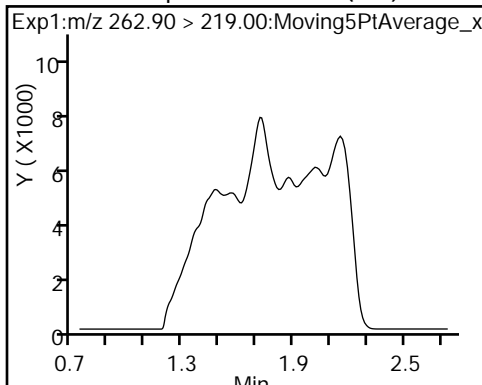
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (ND)

5 Perfluorobutanesulfonic acid

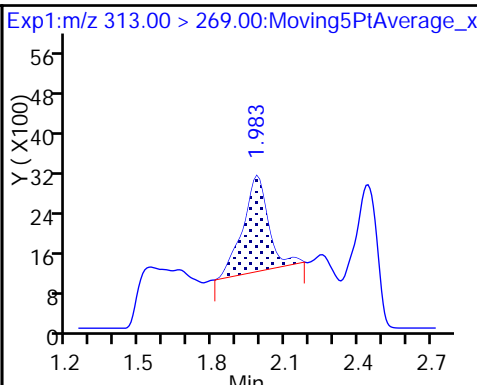
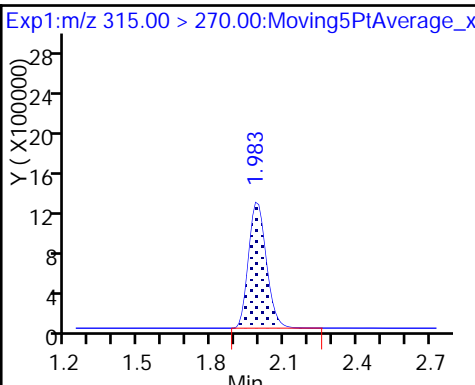
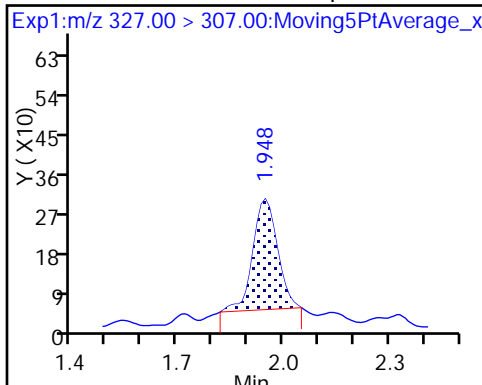
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoate

De 7 13C2 PFHxA

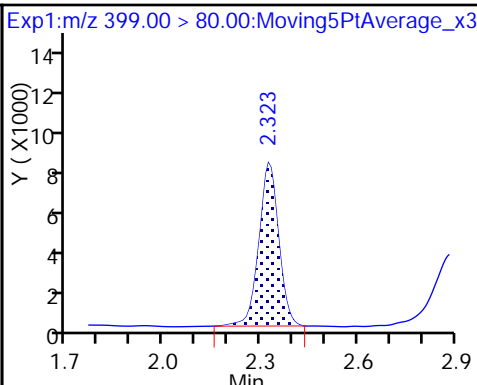
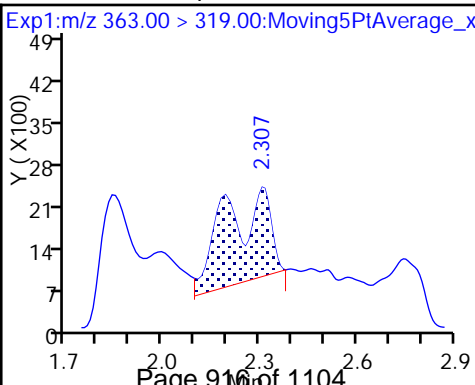
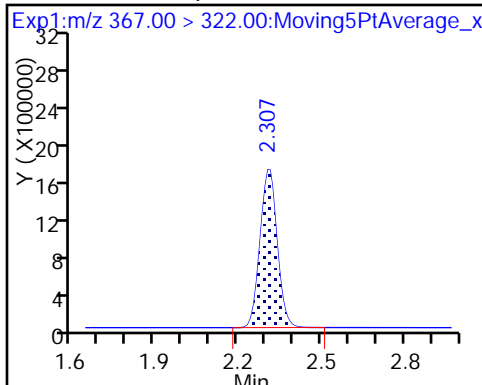
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

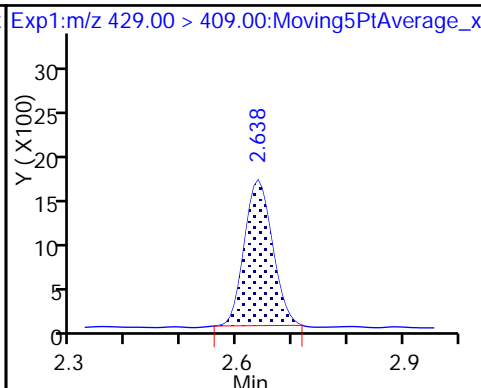
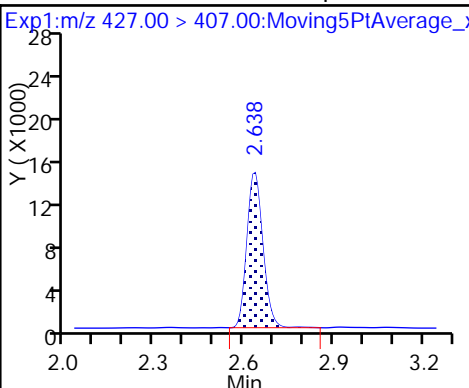
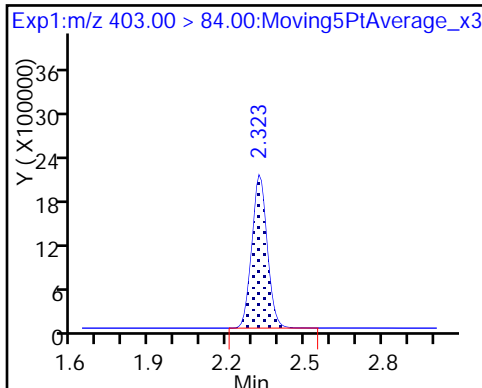
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecane

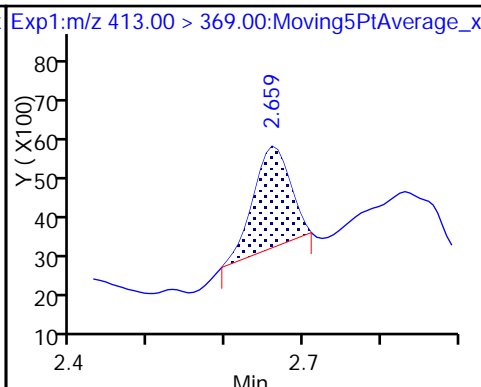
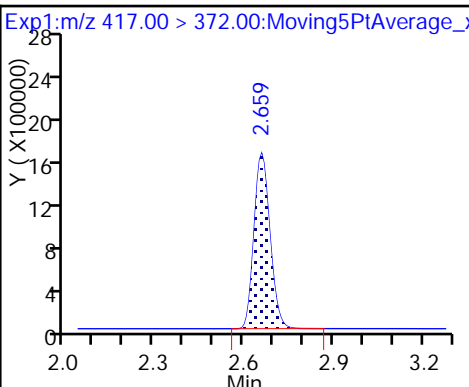
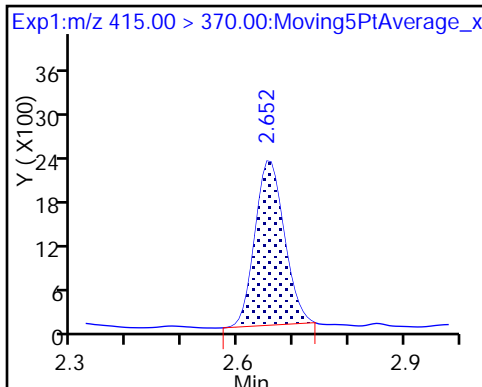
D 12 M2-6:2FTS



* 62 13C2-PFOA

D 14 13C4 PFOA

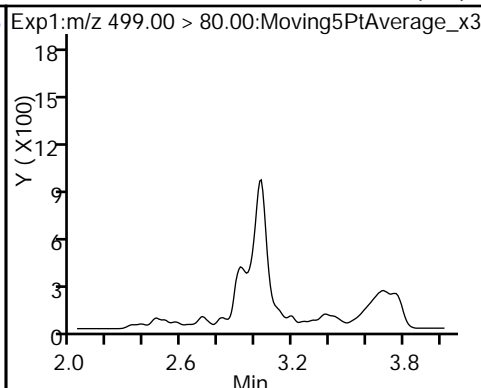
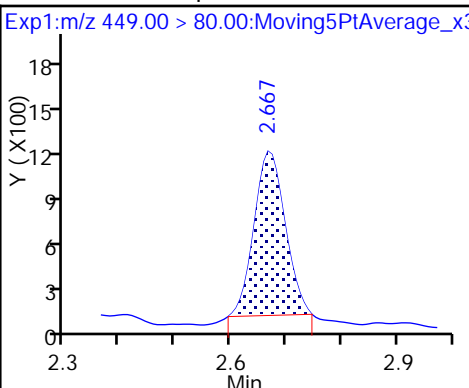
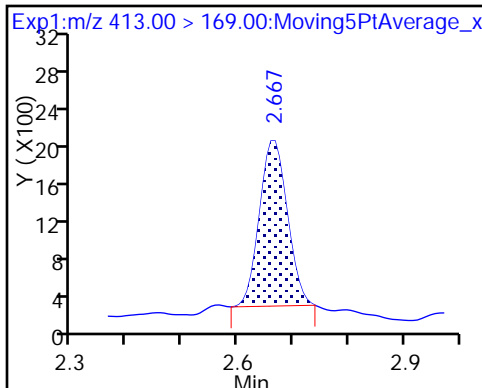
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

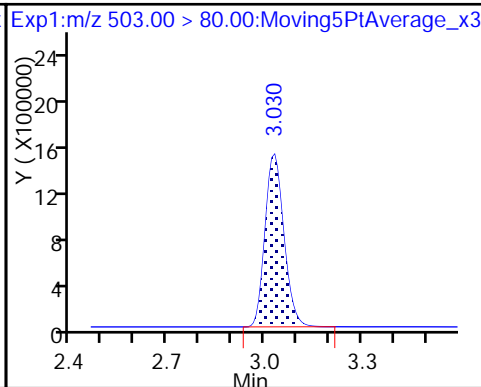
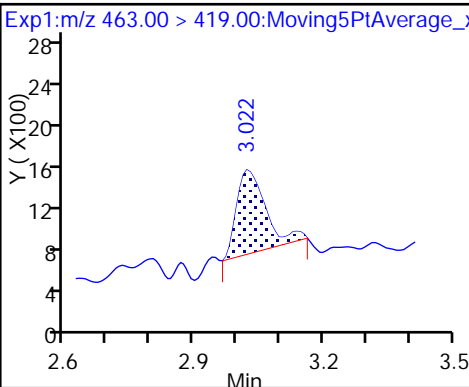
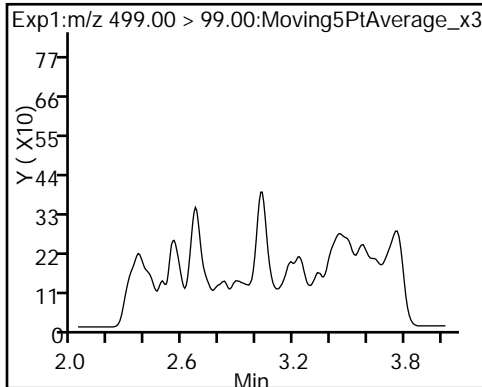
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

20 Perfluorononanoic acid

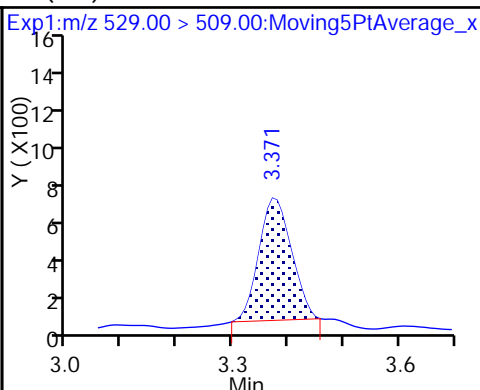
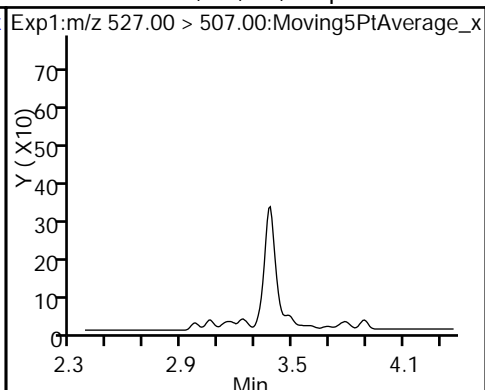
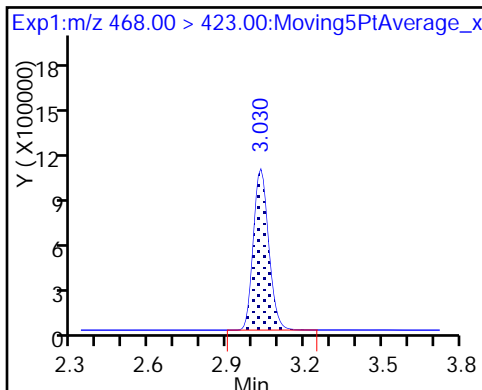
D 18 13C4 PFOS



D 19 13C5 PFNA

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

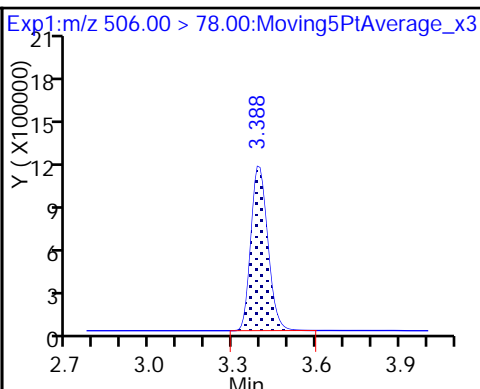
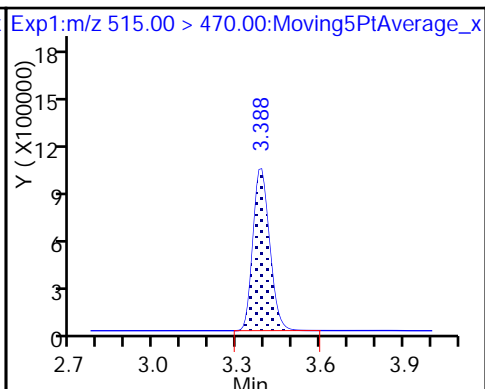
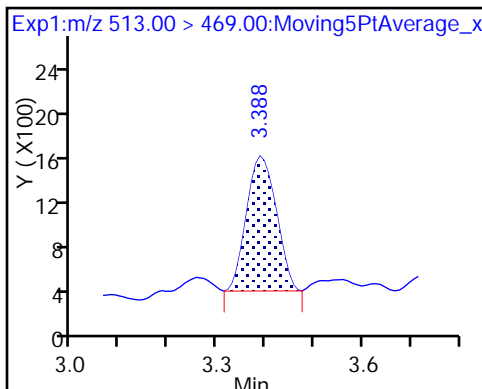
D 20 ND2-8:2FTS



24 Perfluorodecanoic acid

D 23 13C2 PFDA

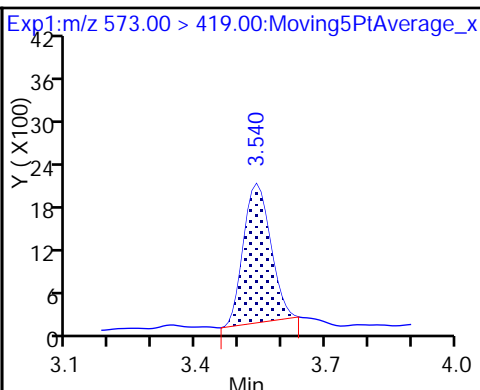
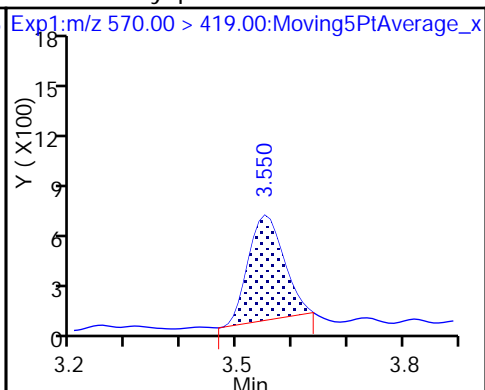
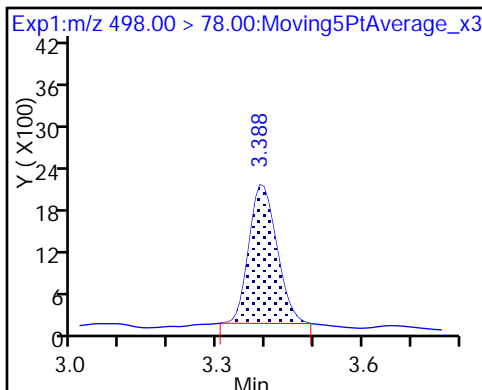
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

28 N-methyl perfluorooctane sulfonamide

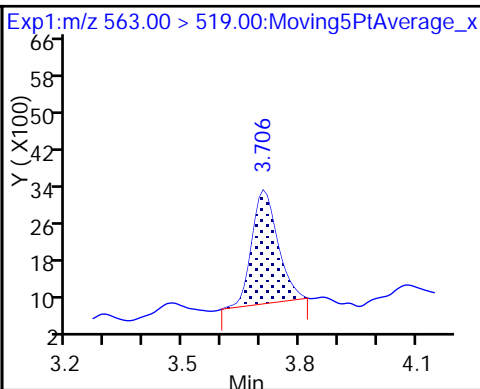
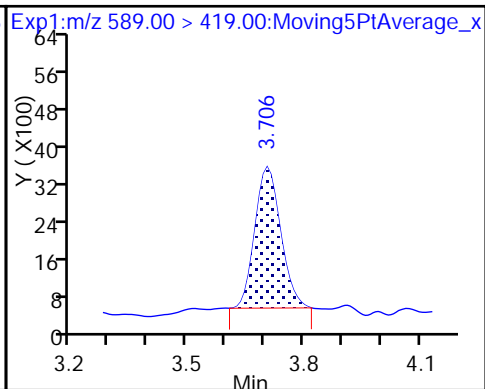
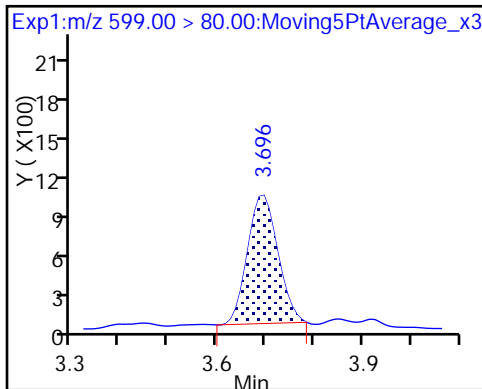
D 27 d3-NMeFOSAA



29 Perfluorodecane Sulfonic acid

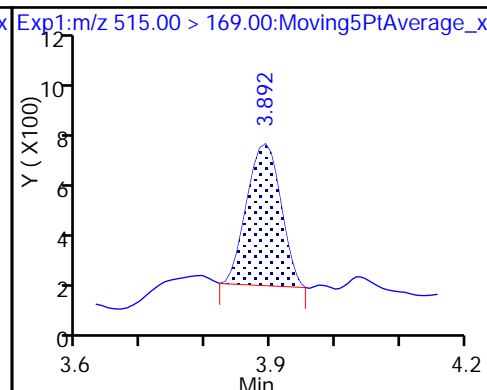
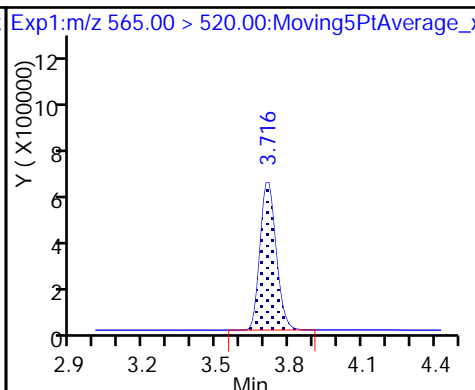
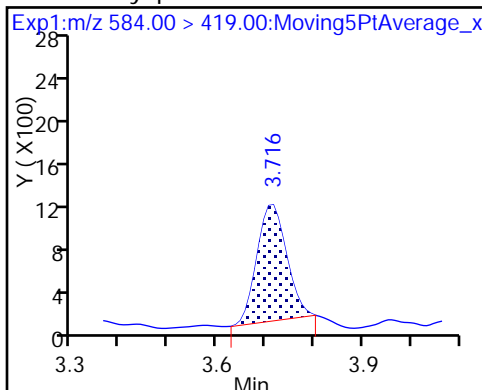
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

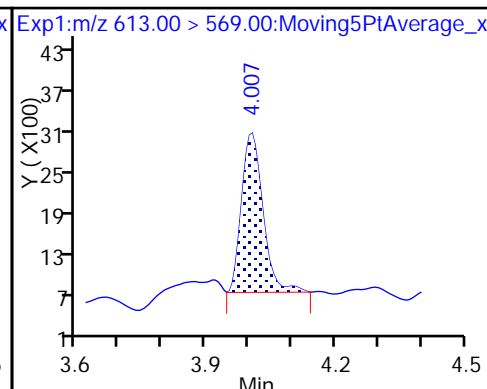
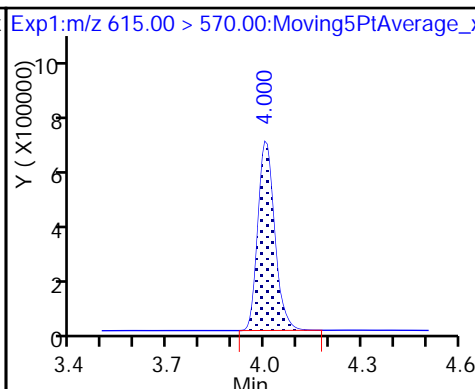
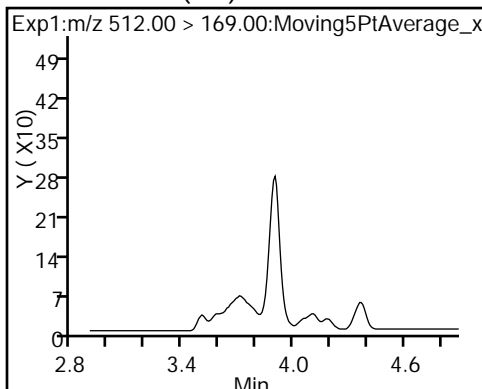
D 34 d-N-MeFOSA-M



35 MeFOSA (ND)

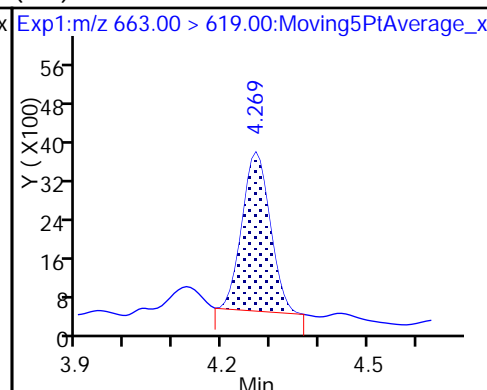
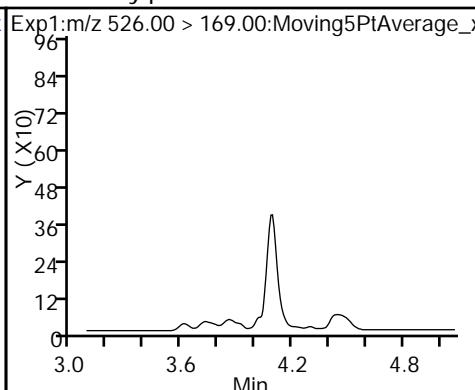
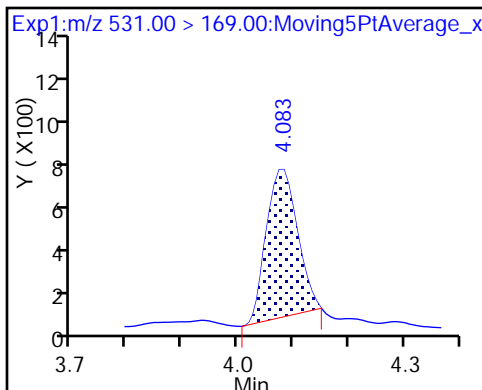
D 36 13C2 PFDaA

37 Perfluorododecanoic acid



D 38 d-N-EtFOSA-M

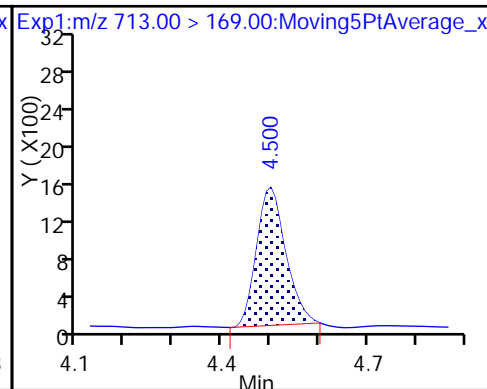
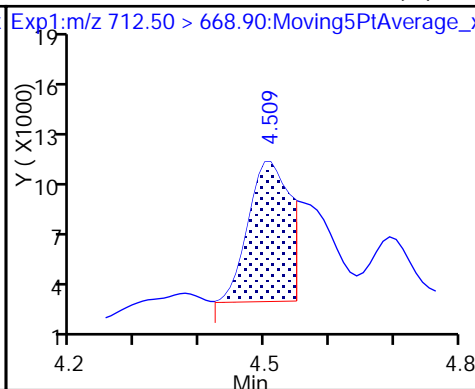
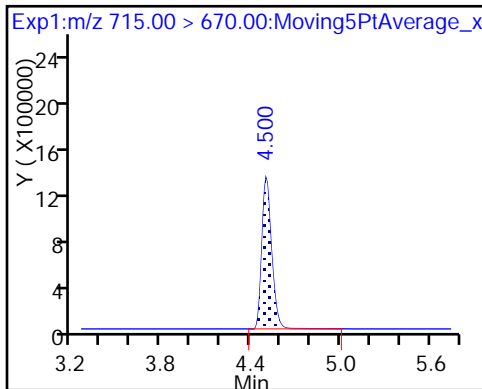
39 N-ethylperfluoro-1-octanesulfonami (ND) Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid (M)

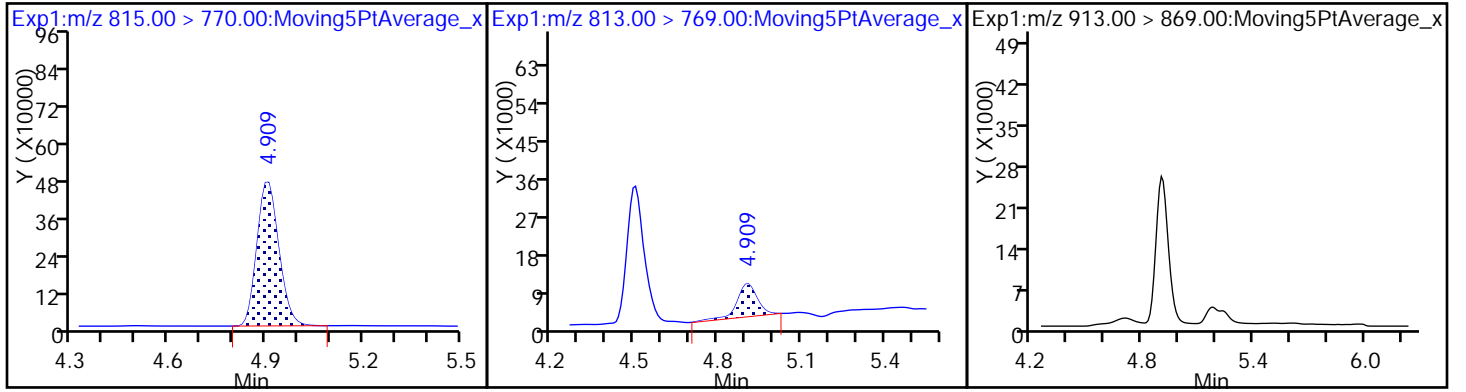
42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid (ND)



TestAmerica Sacramento

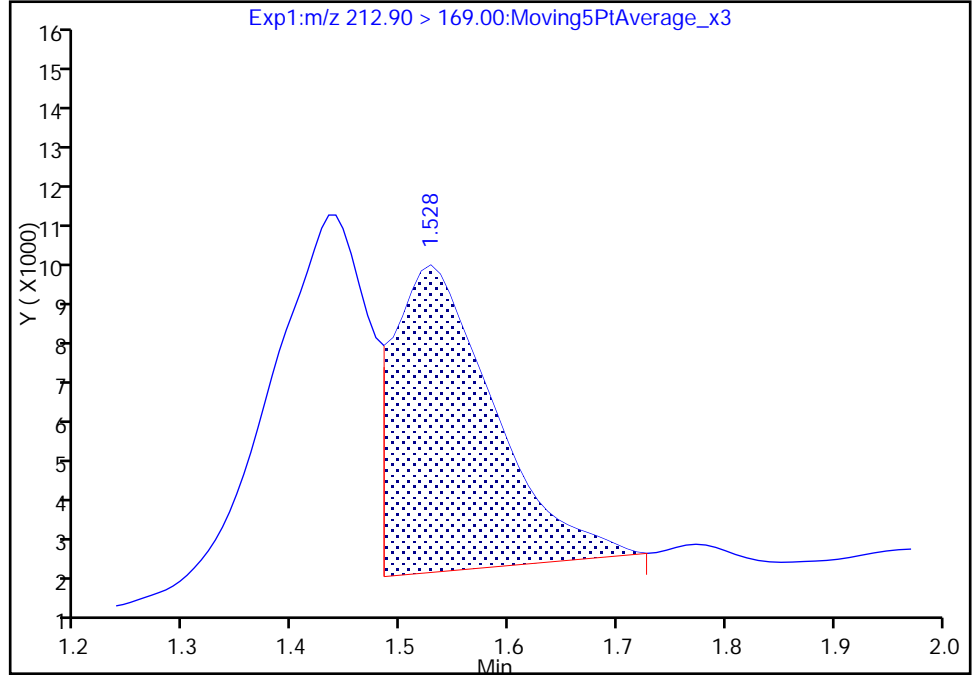
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d
Injection Date: 21-Jul-2017 20:45:25 Instrument ID: A8_N
Lims ID: MB 320-174599/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

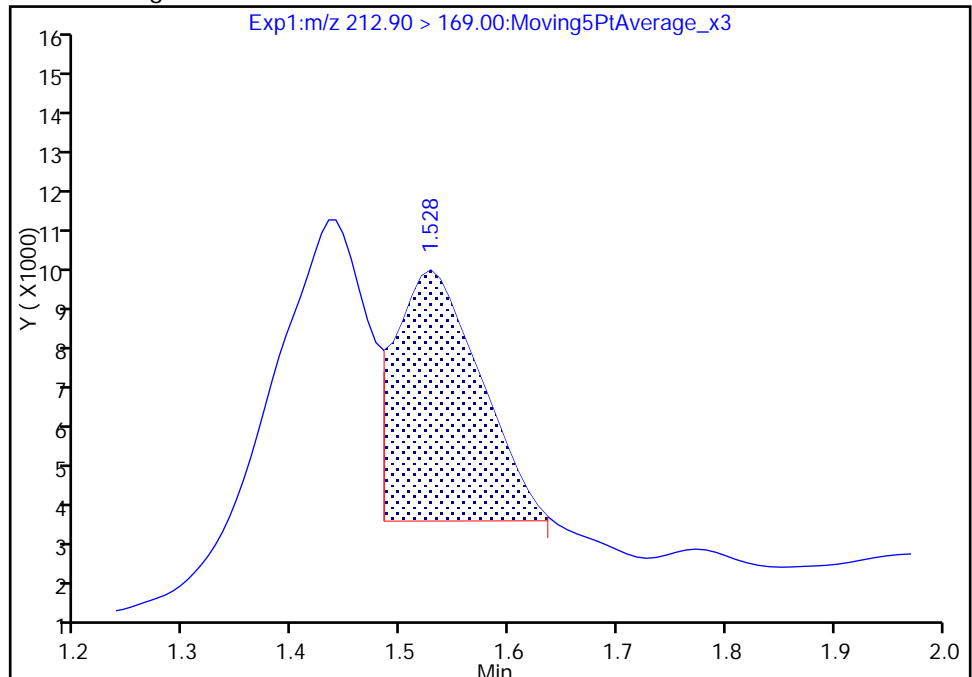
RT: 1.53
Area: 45334
Amount: 0.243702
Amount Units: ng/ml

Processing Integration Results



RT: 1.53
Area: 31366
Amount: 0.168614
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 24-Jul-2017 16:04:11

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

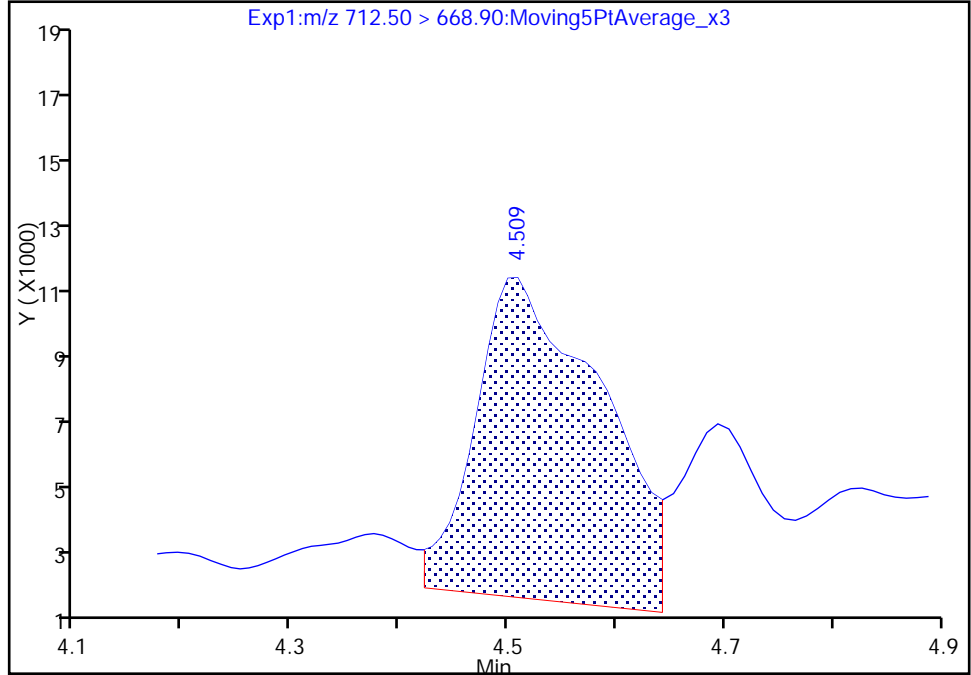
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d
Injection Date: 21-Jul-2017 20:45:25 Instrument ID: A8_N
Lims ID: MB 320-174599/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

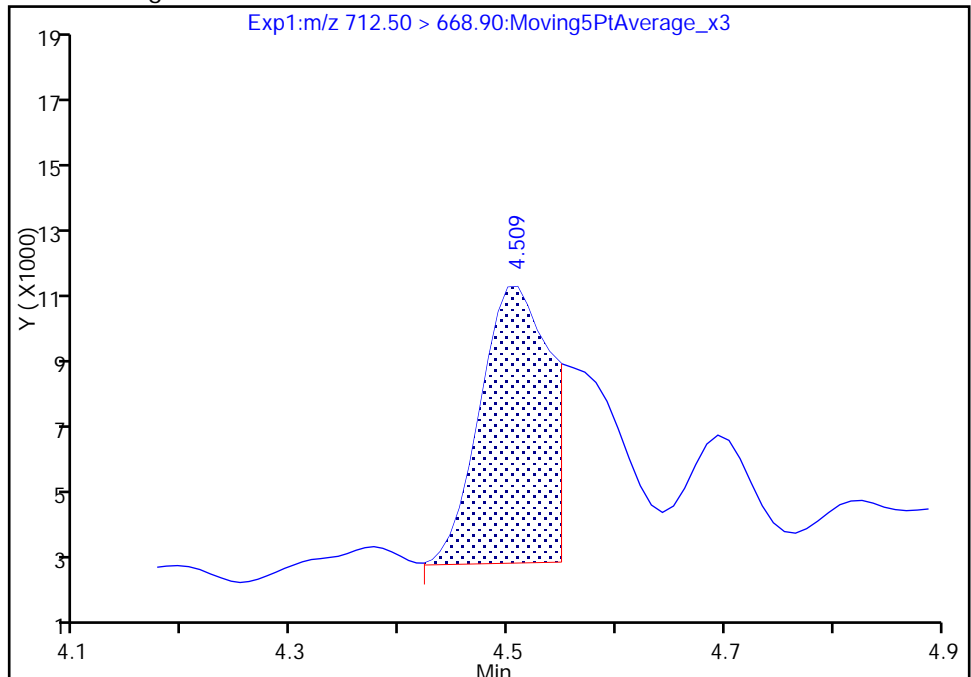
RT: 4.51
Area: 74743
Amount: 0.774380
Amount Units: ng/ml

Processing Integration Results



RT: 4.51
Area: 34289
Amount: 0.355254
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 24-Jul-2017 16:04:49
Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-175074/1-A
 Matrix: Water Lab File ID: 2017.07.25B_002.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 09:15
 Sample wt/vol: 250.00 (mL) Date Analyzed: 07/25/2017 14:17
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175951 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|-------------------------------------|--------|-----|-----|-----|------|
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 0.807 | J M | 2.5 | 1.0 | 0.40 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00998 | 13C2 PFDaA | 116 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_002.d
 Lims ID: MB 320-175074/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 25-Jul-2017 14:17:41 ALS Bottle#: 1 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-175074/1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:05:21

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.547 | 1.559 | -0.012 | 9716633 | 62.3 | | 125 | 36891 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.547 | 1.559 | -0.012 | 1.000 | 90439 | 0.5276 | | 25.3 | M |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.756 | 1.778 | -0.022 | 7196055 | 65.1 | | 130 | 45321 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.784 | 1.797 | -0.013 | 178514 | NC | | | 5247 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.784 | 1.806 | -0.022 | 1.000 | 8728 | 0.0331 | | 6.1 | |
| | 298.90 > 99.00 | 1.784 | 1.806 | -0.022 | 1.000 | 7257 | 1.20(0.00-0.00) | | 6.9 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 1.986 | 2.013 | -0.027 | 1.000 | 1445 | NR | | 73.5 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.032 | 2.058 | -0.026 | 6592866 | 65.2 | | 130 | 30660 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.032 | 2.058 | -0.026 | 1.000 | 11738 | 0.0935 | | 20.8 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.369 | 2.393 | -0.024 | 6457020 | 77.0 | | 154 | 31550 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.369 | 2.393 | -0.024 | 1.000 | 5926 | 0.0447 | | 11.2 | M |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.377 | 2.409 | -0.032 | 8369130 | 60.9 | | 129 | 28295 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.385 | 2.409 | -0.024 | 1.000 | 31687 | 0.1655 | | 48.5 | |
| D 12 M2-6:2FTS | 429.00 > 409.00 | 2.700 | 2.727 | -0.027 | 6052 | 0.1273 | | 0.0 | 321 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.700 | 2.734 | -0.034 | 1.000 | 45474 | NR | | 2074 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|-------|-------|
| D 14 13C4 PFOA | 417.00 | > 372.00 | 2.729 | 2.756 | -0.027 | 6034888 | 73.5 | 147 | 31817 | |
| * 62 13C2-PFOA | 415.00 | > 370.00 | 2.721 | 2.756 | -0.035 | 7961 | 50.0 | | 305 | |
| 15 Perfluorooctanoic acid | 413.00 | > 369.00 | 2.729 | 2.756 | -0.027 | 1.000 | 8237 | 0.0640 | | 2.4 |
| | 413.00 | > 169.00 | 2.729 | 2.756 | -0.027 | 1.000 | 6789 | 1.21(0.90-1.10) | | 63.3 |
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.736 | 2.763 | -0.027 | 1.000 | 3345 | 0.0228 | | 85.0 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.102 | 3.131 | -0.029 | 4376362 | 66.6 | 133 | 16533 | |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.102 | 3.131 | -0.029 | 6244496 | 57.7 | 121 | 23043 | |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.102 | 3.140 | -0.038 | 1.000 | 3608 | 0.0405 | | 9.6 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.459 | 3.487 | -0.028 | 8806889 | 48.2 | 96.4 | 11056 | |
| D 26 M2-8:2FTS | 529.00 | > 509.00 | 3.459 | 3.487 | -0.028 | 2433 | 0.0667 | 0.0 | 95.3 | |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.468 | 3.497 | -0.029 | 4099486 | 73.4 | 147 | 10159 | |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.459 | 3.497 | -0.038 | 1.000 | 8654 | 0.0545 | | 132 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.468 | 3.497 | -0.029 | 1.000 | 3269 | 0.0407 | | 21.3 |
| D 27 d3-NMeFOSAA | 573.00 | > 419.00 | 3.628 | 3.646 | -0.018 | 4802 | 0.2210 | 0.0 | 161 | |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.774 | 3.803 | -0.029 | 1.000 | 3384 | 0.0416 | | 131 |
| D 32 d5-NEtFOSAA | 589.00 | > 419.00 | 3.784 | 3.822 | -0.038 | 7158 | 0.3264 | 0.0 | 22.4 | |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.794 | 3.822 | -0.028 | 1.000 | 10967 | 0.0730 | | 20.7 |
| 33 N-ethyl perfluorooctane sulfonamid | 584.00 | > 419.00 | 3.803 | 3.822 | -0.019 | 1.005 | 1947 | NR | | 51.3 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.794 | 3.822 | -0.028 | 2991559 | 73.4 | 147 | 6744 | |
| D 34 d-N-MeFOSA-M | 515.00 | > 169.00 | 3.952 | 3.979 | -0.027 | 1714 | 0.0364 | 0.0 | 0.5 | |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.087 | 4.116 | -0.029 | 1.000 | 3140 | 0.0655 | | 7.5 |
| D 36 13C2 PFDoA | 615.00 | > 570.00 | 4.087 | 4.116 | -0.029 | 2579761 | 57.8 | 116 | 4067 | |
| D 38 d-N-EtFOSA-M | 531.00 | > 169.00 | 4.138 | 4.167 | -0.029 | 2160 | 0.0442 | 0.0 | 51.4 | |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.358 | 4.380 | -0.022 | 1.000 | 4722 | 0.1075 | | 1.2 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 42 Perfluorotetradecanoic acid | | | | | | | | | | M |
| 712.50 > 668.90 | 4.624 | 4.614 | 0.010 | 1.000 | 40034 | 0.4037 | | | 2.5 | M |
| 713.00 > 169.00 | 4.593 | 4.614 | -0.021 | 0.993 | 5340 | | 7.50(0.00-0.00) | | 99.4 | |
| D 43 13C2-PFTeDA | | | | | | | | | | |
| 715.00 > 670.00 | 4.593 | 4.614 | -0.021 | | 7719137 | 95.0 | | 190 | 35151 | |
| 45 Perfluorohexadecanoic acid | | | | | | | | | | |
| 813.00 > 769.00 | 5.010 | 5.025 | -0.015 | 1.000 | 51502 | 0.5948 | | | 7.4 | |
| D 44 13C2-PFHxDA | | | | | | | | | | |
| 815.00 > 770.00 | 5.010 | 5.025 | -0.015 | | 2521314 | 61.0 | | 122 | 3543 | |
| 46 Perfluorooctadecanoic acid | | | | | | | | | | |
| 913.00 > 869.00 | 5.245 | 5.383 | -0.138 | 1.000 | 5047 | 0.1278 | | | 1.7 | |

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

NC - Not Calibrated

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_002.d

Injection Date: 25-Jul-2017 14:17:41

Instrument ID: A8_N

Lims ID: MB 320-175074/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

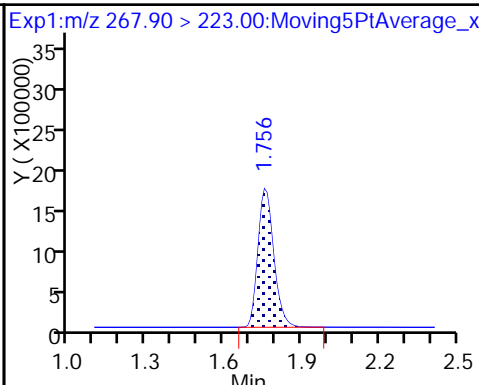
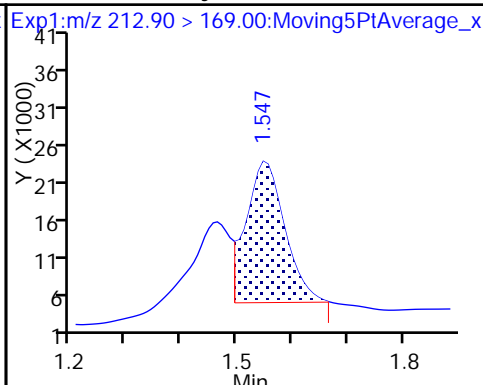
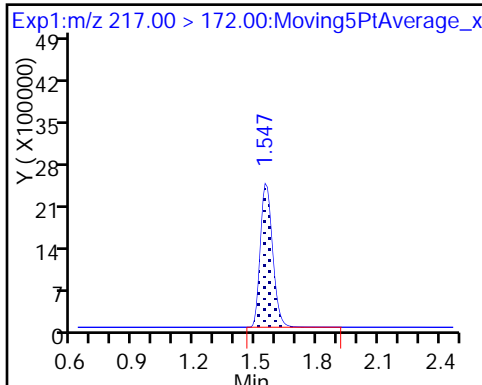
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

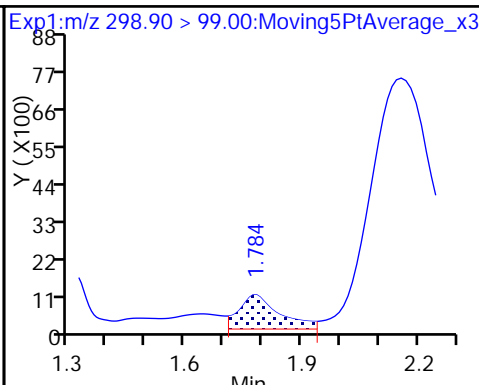
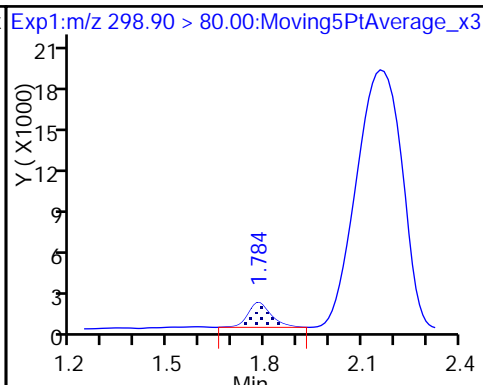
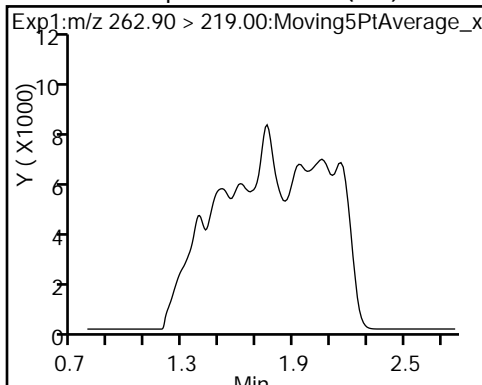
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (ND)

5 Perfluorobutanesulfonic acid

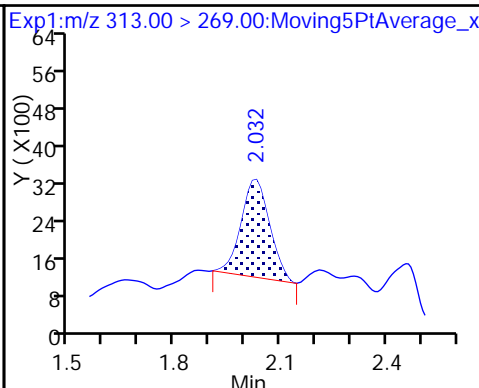
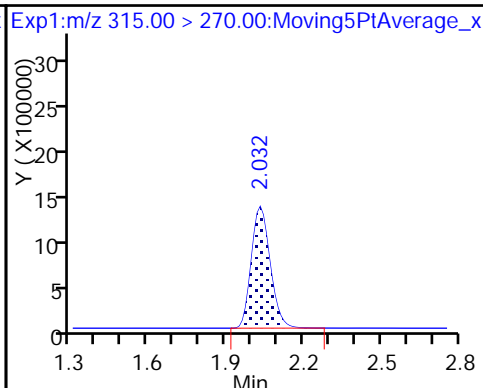
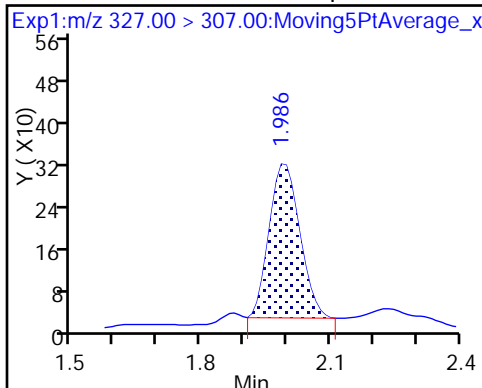
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexa

De 7 13C2 PFHxA

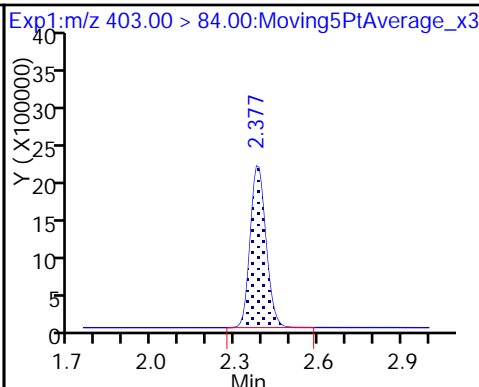
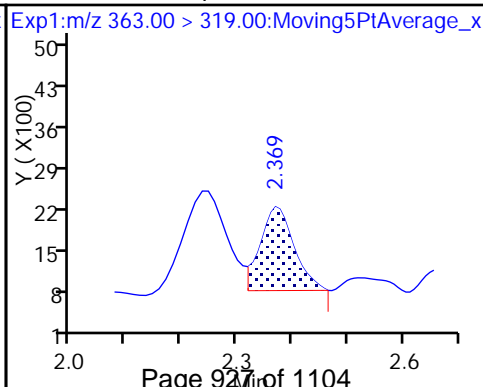
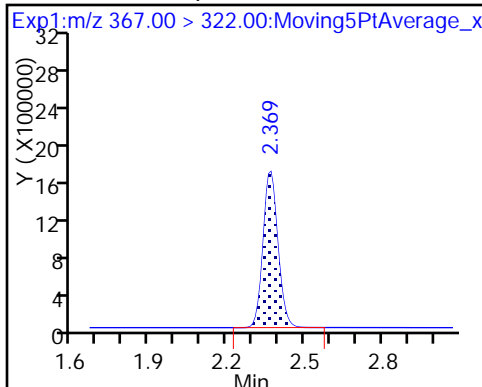
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid (M)

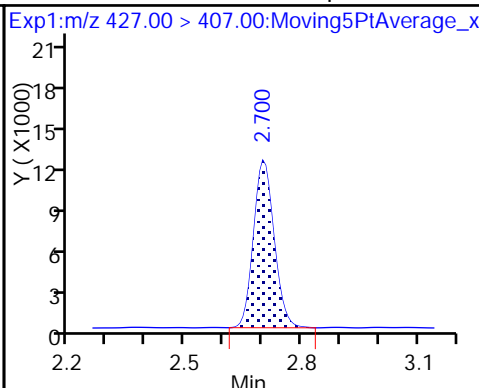
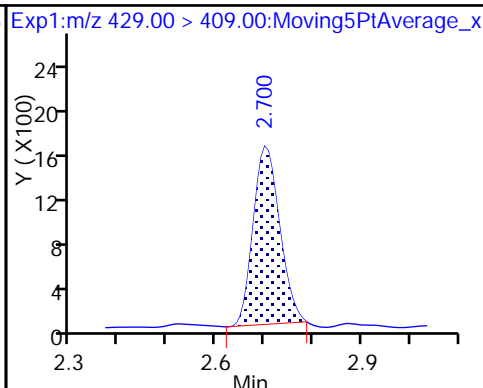
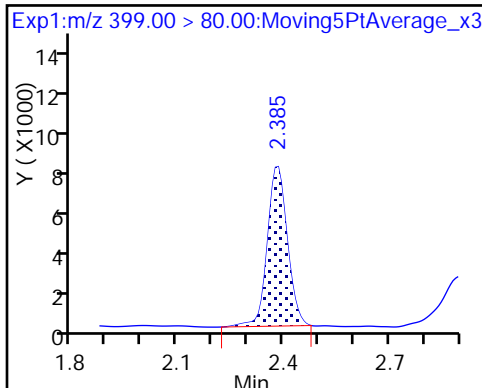
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

D 12 M2-6:2F5

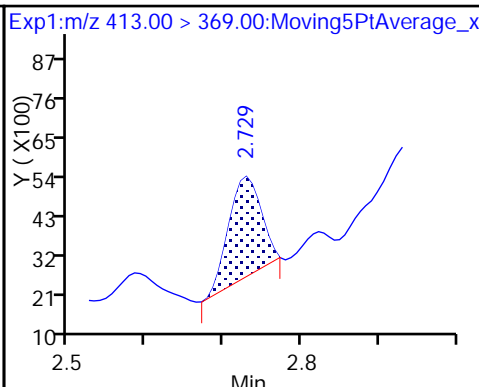
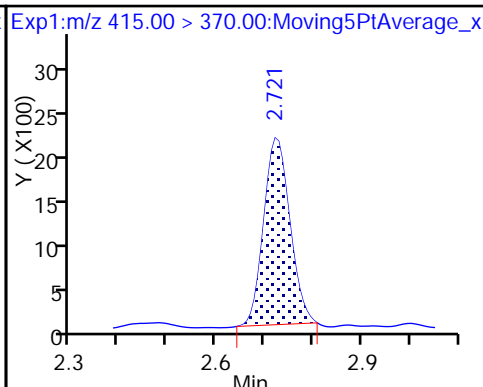
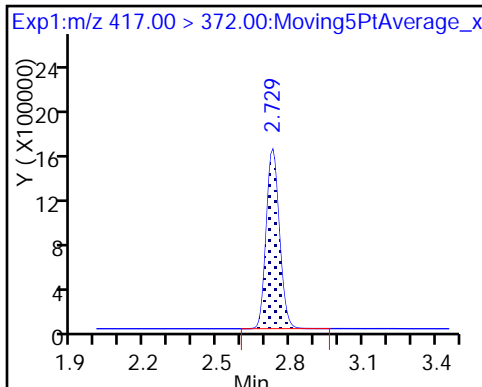
13 Sodium 1H,1H,2H,2H-perfluorooctane



D 14 13C4 PFOA

* 62 13C2-PFOA

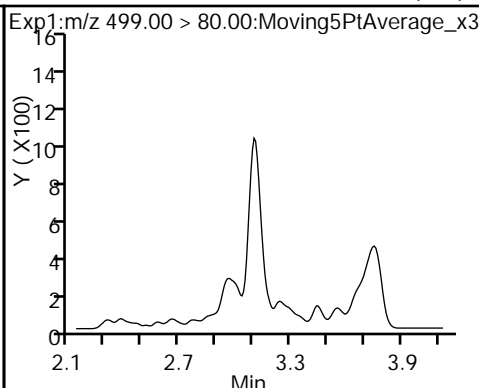
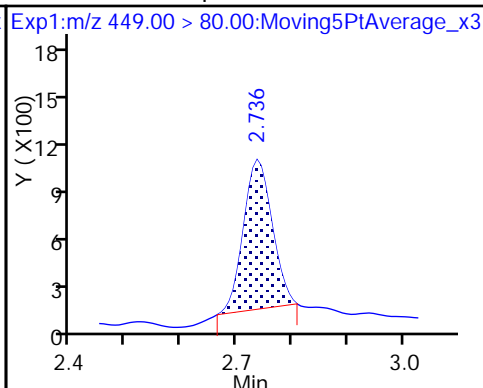
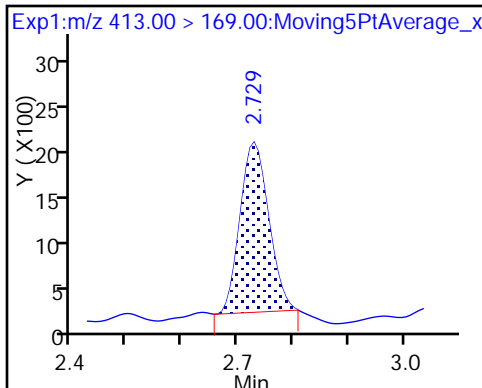
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

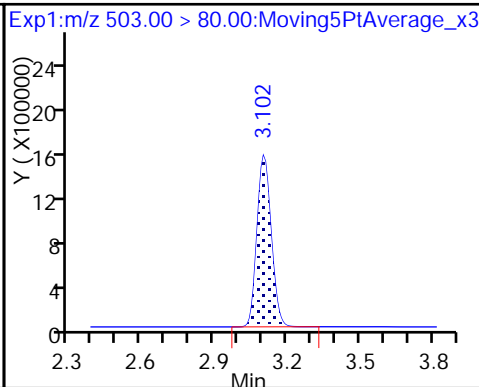
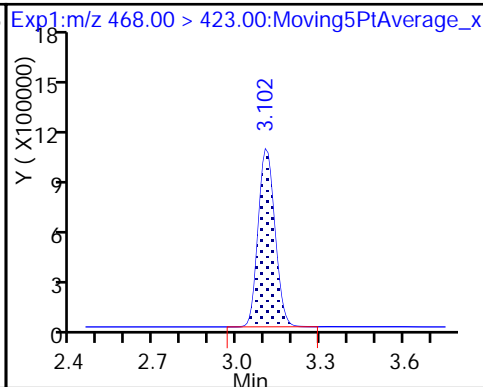
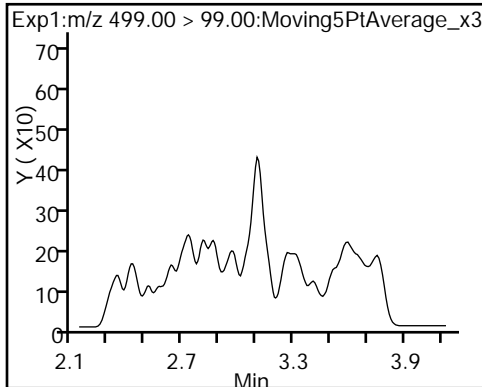
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

D 19 13C5 PFNA

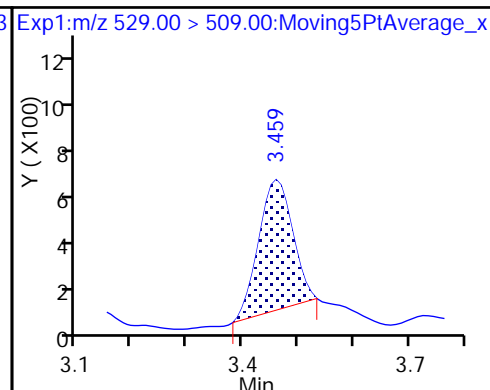
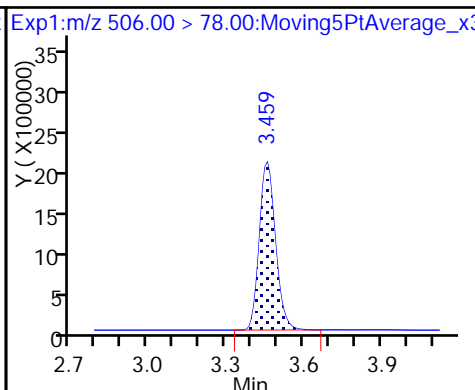
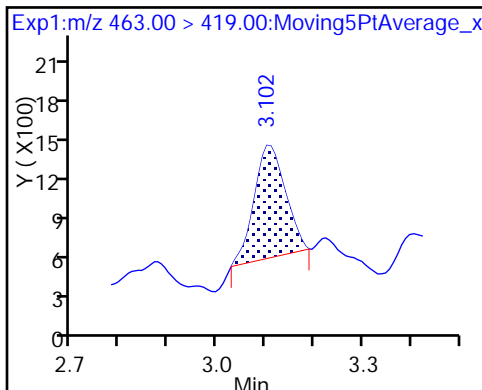
D 18 13C4 PFOS



20 Perfluorononanoic acid

D 21 13C8 FOSA

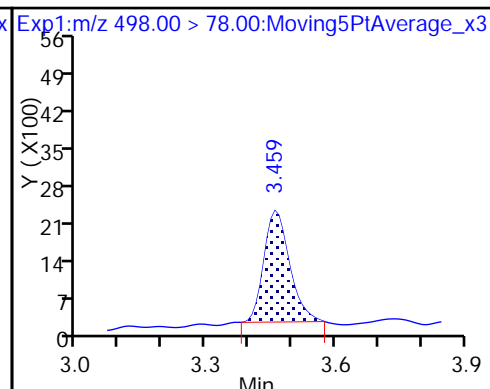
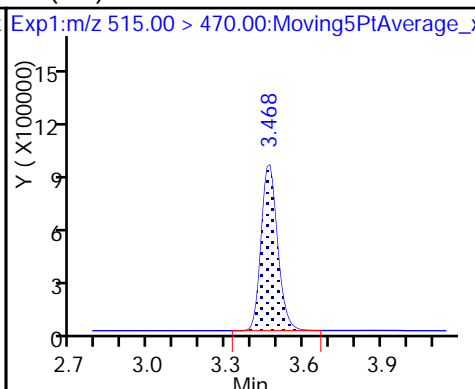
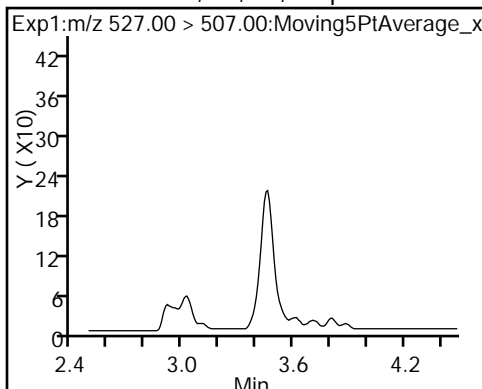
D 26 M2-8:2FTS



25 Sodium 1H,1H,2H,2H-perfluorodecanoate (ND)

D 21 13C8 FOSA

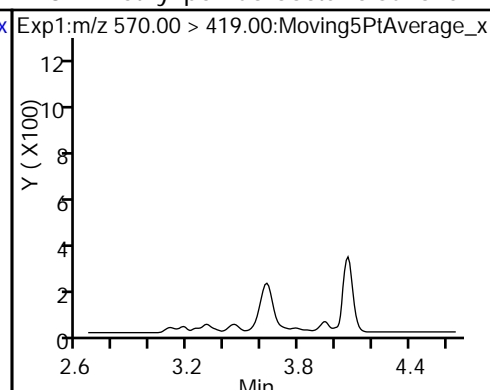
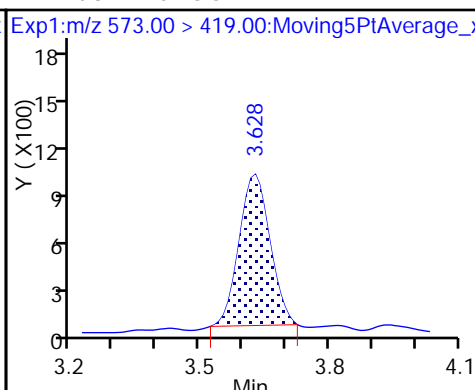
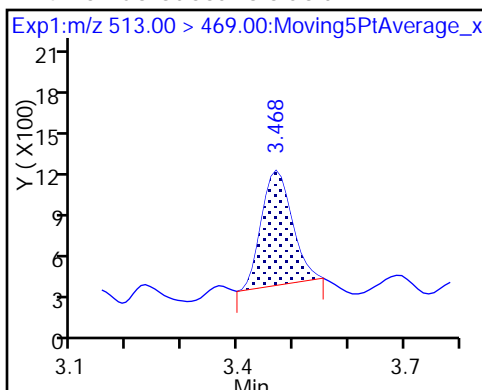
22 Perfluorooctane Sulfonamide



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

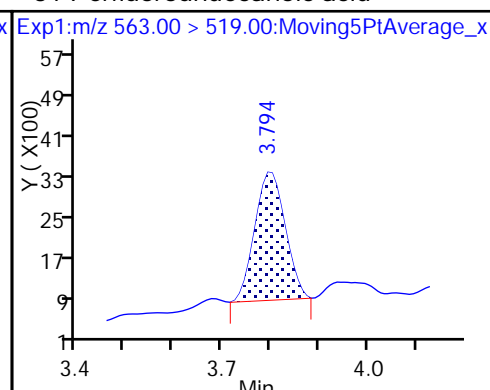
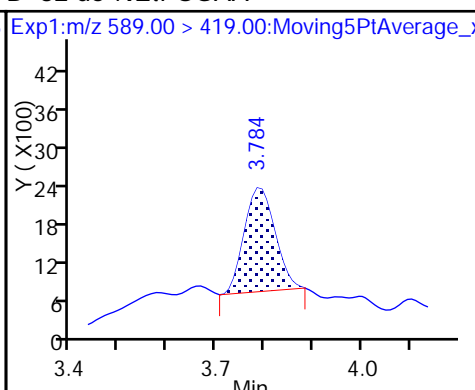
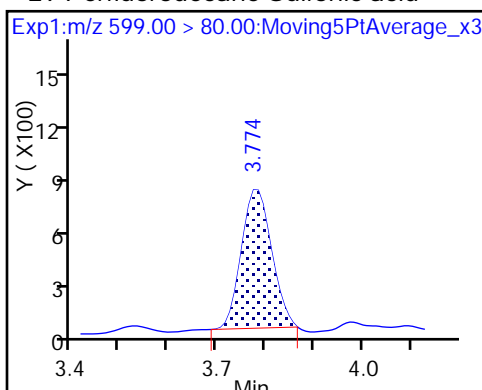
28 N-methyl perfluorooctane sulfonami (ND)



29 Perfluorodecane Sulfonic acid

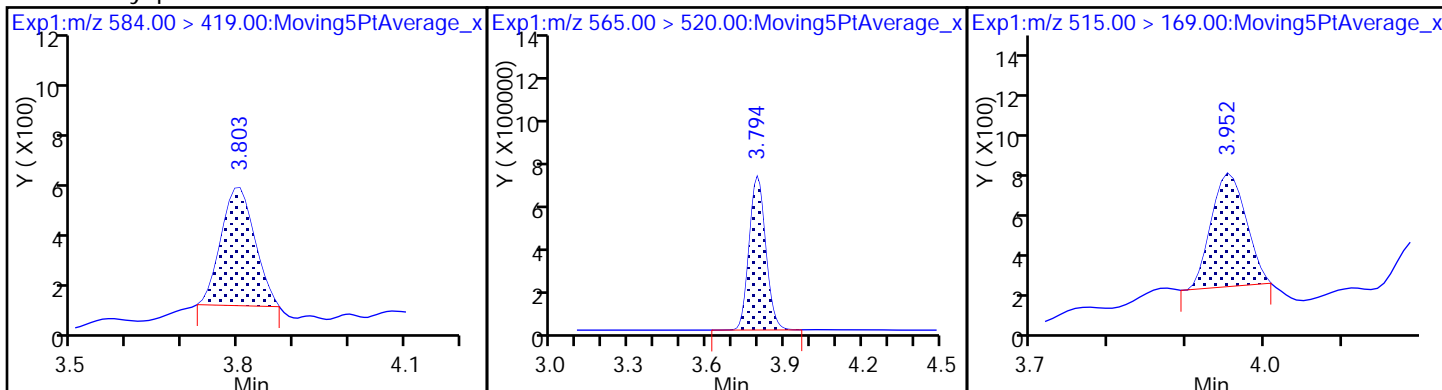
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

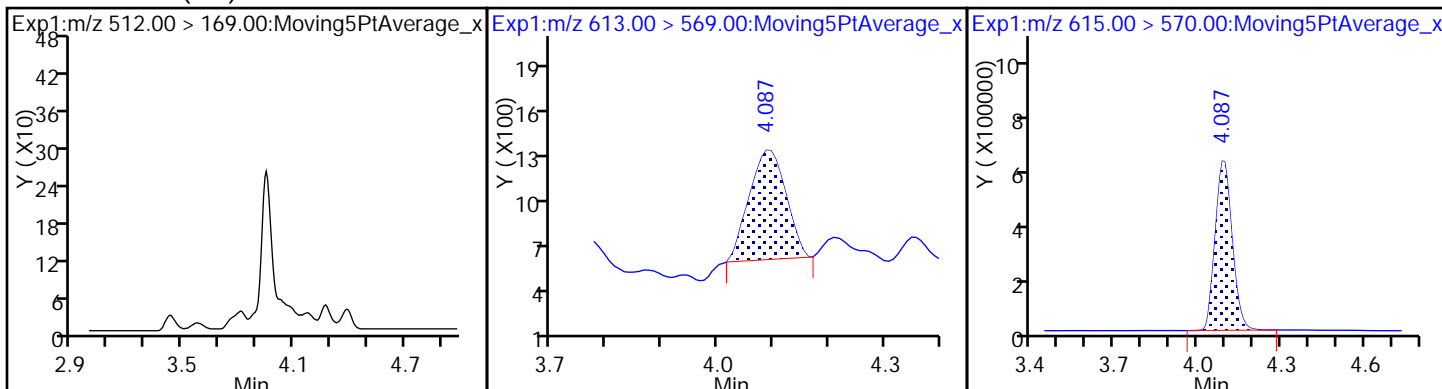
D 34 d-N-MeFOSA-M



35 MeFOSA (ND)

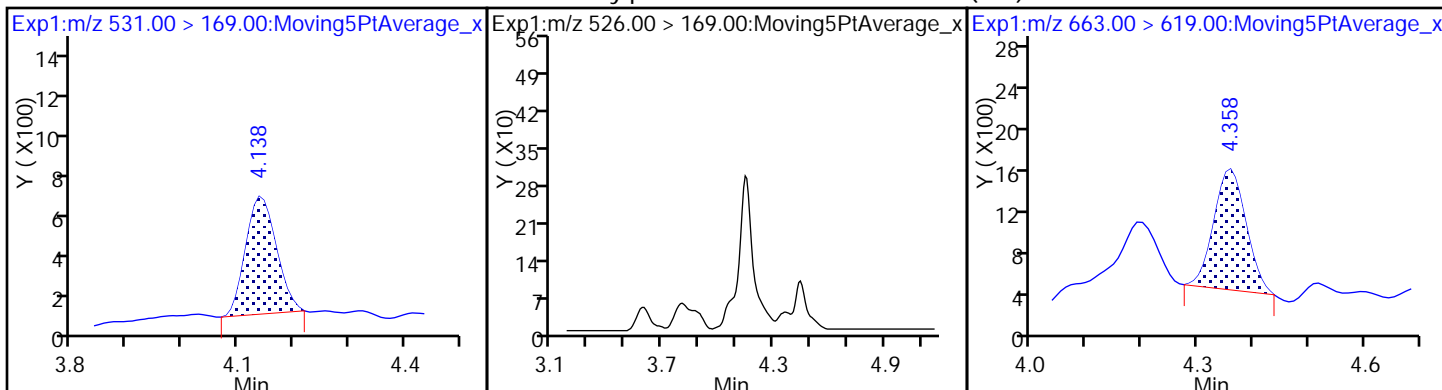
37 Perfluorododecanoic acid

D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

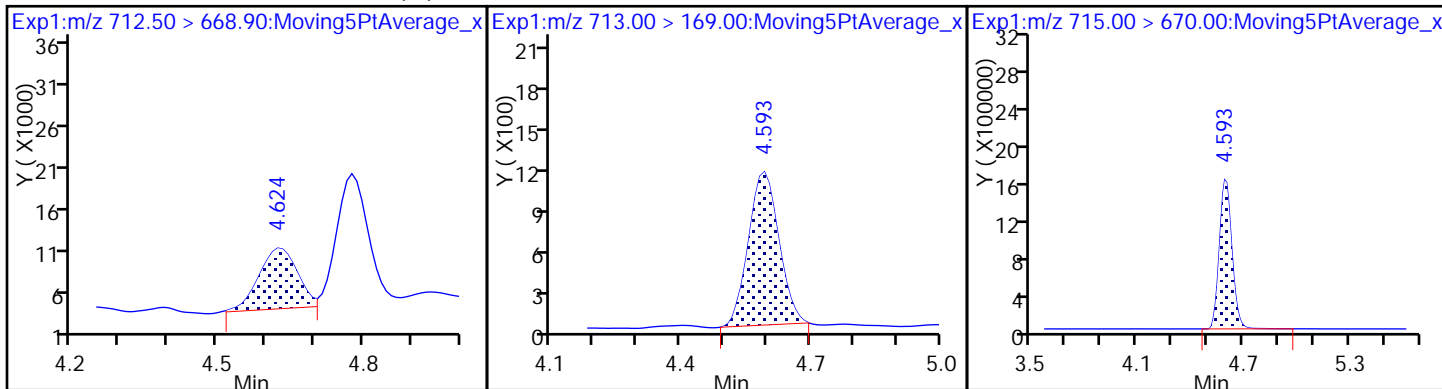
39 N-ethylperfluoro-1-octanesulfonami (ND) Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid (M)

42 Perfluorotetradecanoic acid

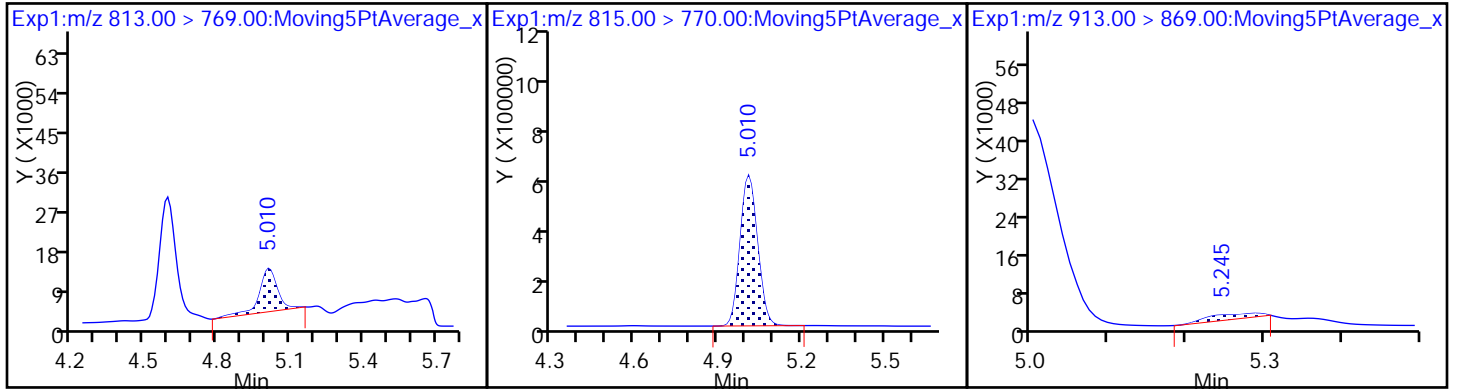
D 43 13C2-PFTeDA



45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



TestAmerica Sacramento

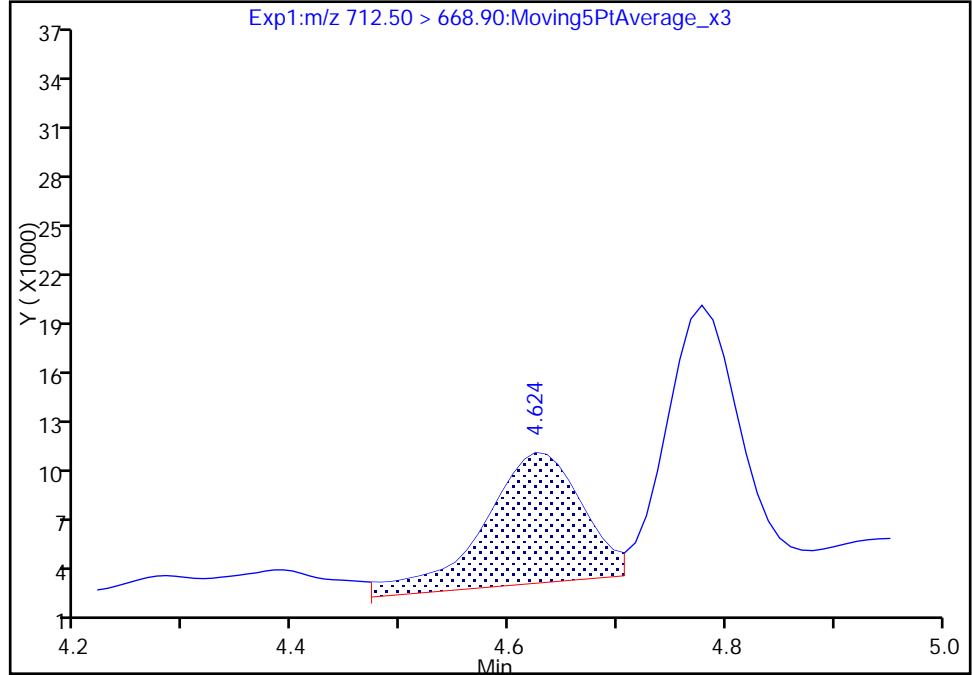
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_002.d
Injection Date: 25-Jul-2017 14:17:41 Instrument ID: A8_N
Lims ID: MB 320-175074/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

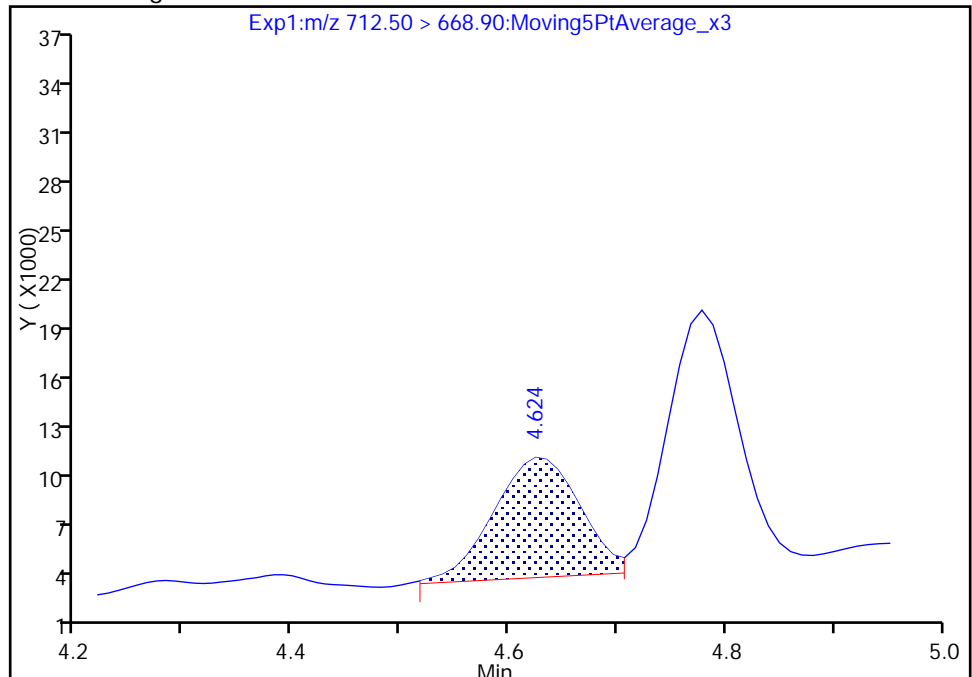
RT: 4.62
Area: 49889
Amount: 0.503075
Amount Units: ng/ml

Processing Integration Results



RT: 4.62
Area: 40034
Amount: 0.403698
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 26-Jul-2017 11:05:03

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-175097/1-A
 Matrix: Water Lab File ID: 2017.07.23A_002.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250 (mL) Date Analyzed: 07/23/2017 14:39
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|---|-----|-----|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 1.0 | U | 2.5 | 1.0 | 0.46 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 2.0 | U | 2.5 | 2.0 | 0.99 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 2.0 | U | 2.5 | 2.0 | 0.79 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 2.0 | U | 2.5 | 2.0 | 0.80 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 2.0 | U | 2.5 | 2.0 | 0.75 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 2.0 | U | 2.5 | 2.0 | 0.65 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1.0 | U | 2.5 | 1.0 | 0.44 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.5 | 2.0 | 0.75 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.5 | 2.0 | 0.58 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 2.0 | U | 2.5 | 2.0 | 0.55 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 2.0 | U | 2.5 | 2.0 | 0.92 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 2.0 | U | 2.5 | 2.0 | 0.87 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 2.0 | U | 2.5 | 2.0 | 0.71 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 3.0 | U | 4.0 | 3.0 | 1.3 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 3.0 | U | 4.0 | 3.0 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.0 | U | 40 | 2.0 | 0.64 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-175097/1-A
 Matrix: Water Lab File ID: 2017.07.23A_002.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250 (mL) Date Analyzed: 07/23/2017 14:39
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 51 | | 25-150 |
| STL00992 | 13C4 PFBA | 103 | | 25-150 |
| STL00993 | 13C2 PFHxA | 100 | | 25-150 |
| STL00990 | 13C4 PFOA | 110 | | 25-150 |
| STL00995 | 13C5 PFNA | 102 | | 25-150 |
| STL00996 | 13C2 PFDA | 118 | | 25-150 |
| STL00997 | 13C2 PFUnA | 98 | | 25-150 |
| STL00998 | 13C2 PFDoA | 84 | | 25-150 |
| STL00994 | 18O2 PFHxS | 96 | | 25-150 |
| STL00991 | 13C4 PFOS | 93 | | 25-150 |
| STL01892 | 13C4-PFHpA | 114 | | 25-150 |
| STL01893 | 13C5 PFPeA | 105 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_002.d
 Lims ID: MB 320-175097/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 23-Jul-2017 14:39:50 ALS Bottle#: 1 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-175097/1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 12:07:17 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 11:57:42

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.547 | 1.556 | -0.009 | 1.000 | 29783 | 0.2109 | | 8.2 | |
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.556 | 1.556 | 0.0 | | 8005223 | 51.3 | 103 | 38206 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.775 | 1.775 | 0.0 | | 5774198 | 52.3 | 105 | 57017 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.793 | 1.793 | 0.0 | | 134843 | NC | | 4414 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.793 | 1.802 | -0.009 | 1.000 | 7939 | 0.0403 | | 6.3 | |
| | 298.90 > 99.00 | 1.793 | 1.802 | -0.009 | 1.000 | 7679 | 1.03(0.00-0.00) | | 6.0 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.054 | 2.055 | -0.001 | 1.000 | 7309 | 0.0761 | | 15.4 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.054 | 2.055 | -0.001 | | 5045487 | 49.9 | 99.8 | 34645 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.404 | 2.403 | 0.001 | 1.000 | 5592 | 0.0569 | | 14.1 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.404 | 2.403 | 0.001 | | 4790300 | 57.1 | 114 | 31759 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.420 | 2.419 | 0.001 | 1.000 | 24234 | 0.1691 | | 39.8 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.420 | 2.419 | 0.001 | | 6264333 | 45.6 | 96.4 | 32074 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.746 | 2.742 | 0.004 | 1.000 | 10440 | 0.2087 | | 349 | |
| D 12 M2-6:2FTS | 429.00 > 409.00 | 2.746 | 2.742 | 0.004 | | 2652347 | 55.8 | 117 | 33974 | |
| * 62 13C2-PFOA | 415.00 > 370.00 | 2.768 | 2.764 | 0.004 | | 7596 | 50.0 | | 346 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.782 | 2.771 | 0.011 | 1.000 | 8424 | 0.0871 | | | 2.9 | |
| 413.00 > 169.00 | 2.775 | 2.771 | 0.004 | 0.997 | 5641 | | 1.49(0.90-1.10) | | 49.9 | |
| D 14 13C4 PFOA | | | | | | | | | | |
| 417.00 > 372.00 | 2.775 | 2.771 | 0.004 | | 4531496 | 55.2 | | 110 | 32316 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.782 | 2.778 | 0.004 | 1.000 | 3709 | 0.0330 | | | 127 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.143 | 3.151 | -0.008 | 1.000 | 1933 | 0.0284 | | | 7.0 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.152 | 3.151 | 0.001 | | 4791520 | 44.3 | | 92.6 | 18932 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.152 | 3.151 | 0.001 | | 3346390 | 50.9 | | 102 | 17256 | |
| D 26 M2-8:2FTS | | | | | | | | | | |
| 529.00 > 509.00 | 3.502 | 3.497 | 0.005 | | 2244627 | 61.5 | | 128 | 21868 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.502 | 3.507 | -0.005 | | 4705396 | 25.7 | | 51.5 | 8456 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.502 | 3.507 | -0.005 | 1.000 | 13674 | 0.1611 | | | 146 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.511 | 3.507 | 0.004 | | 3283766 | 58.8 | | 118 | 8909 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.521 | 3.507 | 0.014 | 1.000 | 2635 | 0.0409 | | | 14.1 | |
| D 27 d3-NMeFOSAA | | | | | | | | | | |
| 573.00 > 419.00 | 3.669 | 3.658 | 0.011 | | 950409 | 43.7 | | 87.5 | 8685 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.822 | 3.815 | 0.007 | 1.000 | 2361 | 0.0378 | | | 73.6 | |
| D 32 d5-NEtFOSAA | | | | | | | | | | |
| 589.00 > 419.00 | 3.831 | 3.824 | 0.007 | | 968085 | 44.1 | | 88.3 | 3021 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.840 | 3.833 | 0.007 | 1.000 | 6150 | 0.0446 | | | 18.5 | |
| 33 N-ethyl perfluorooctane sulfonamid | | | | | | | | | | |
| 584.00 > 419.00 | 3.840 | 3.833 | 0.007 | 1.002 | 2498 | 0.1520 | | | 71.4 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.840 | 3.833 | 0.007 | | 1993772 | 49.0 | | 97.9 | 7905 | |
| D 34 d-N-MeFOSA-M | | | | | | | | | | |
| 515.00 > 169.00 | 3.983 | 3.993 | -0.010 | | 3086 | 0.0655 | | 0.1 | 1.0 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.137 | 4.123 | 0.014 | 1.000 | 4429 | 0.1266 | | | 2.7 | |
| D 36 13C2 PFDoA | | | | | | | | | | |
| 615.00 > 570.00 | 4.137 | 4.123 | 0.014 | | 1881908 | 42.1 | | 84.3 | 5079 | |
| D 38 d-N-EtFOSA-M | | | | | | | | | | |
| 531.00 > 169.00 | 4.171 | 4.174 | -0.003 | | 2926 | 0.0599 | | 0.1 | 13.6 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.396 | 4.388 | 0.008 | 1.000 | 4833 | 0.1508 | | | 2.0 | |
| D 43 13C2-PFTeDA | | | | | | | | | | |
| 715.00 > 670.00 | 4.639 | 4.619 | 0.021 | | 6593304 | 81.2 | | 162 | 38662 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|------|-------|
| 42 Perfluorotetradecanoic acid | | | | | | | | | | M |
| 712.50 > 668.90 | 4.649 | 4.630 | 0.019 | 1.000 | 47041 | 0.6503 | | | 3.8 | M |
| 713.00 > 169.00 | 4.629 | 4.630 | -0.001 | 0.996 | 5229 | | 9.00(0.00-0.00) | | 104 | |
| 45 Perfluorohexadecanoic acid | | | | | | | | | | |
| 813.00 > 769.00 | 5.043 | 5.030 | 0.013 | 1.000 | 30817 | 0.3682 | | | 7.5 | |
| D 44 13C2-PFHxDA | | | | | | | | | | |
| 815.00 > 770.00 | 5.043 | 5.030 | 0.013 | | 1858715 | 45.0 | | 90.0 | 5402 | |
| 46 Perfluorooctadecanoic acid | | | | | | | | | | |
| 913.00 > 869.00 | 5.293 | 5.381 | -0.088 | 1.000 | 10671 | 0.3705 | | | 4.1 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_002.d

Injection Date: 23-Jul-2017 14:39:50

Instrument ID: A8_N

Lims ID: MB 320-175097/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

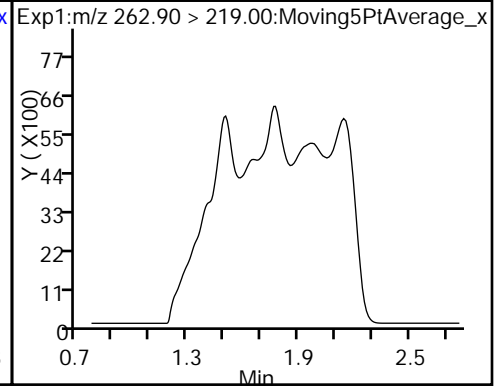
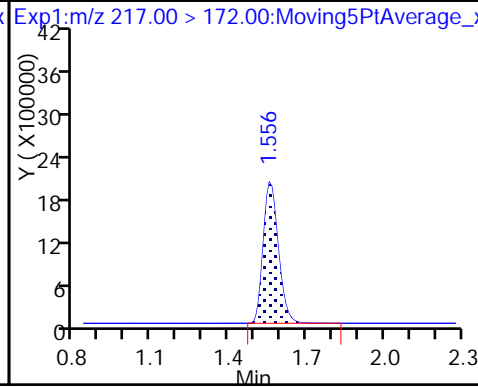
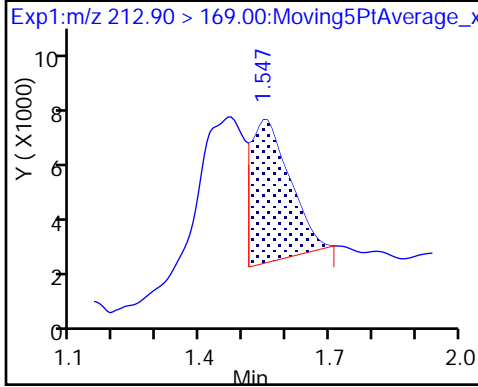
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

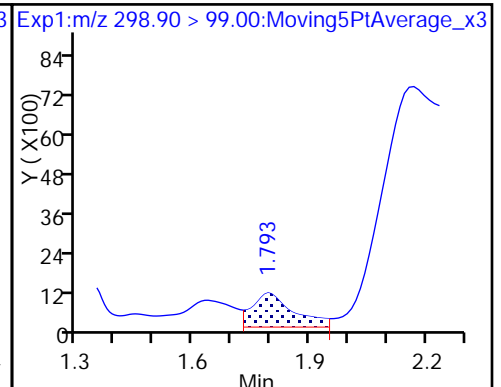
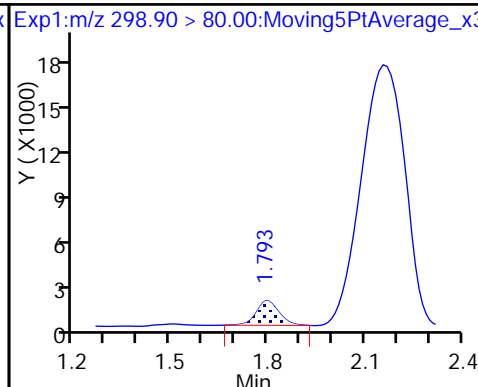
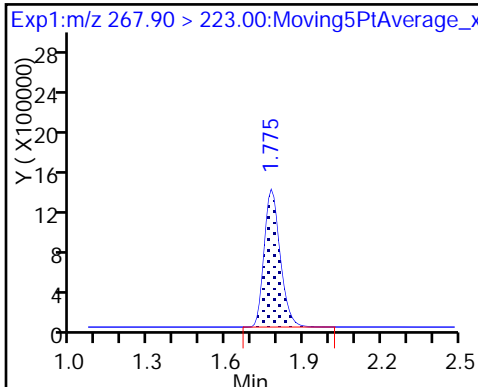
4 Perfluoropentanoic acid (ND)



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

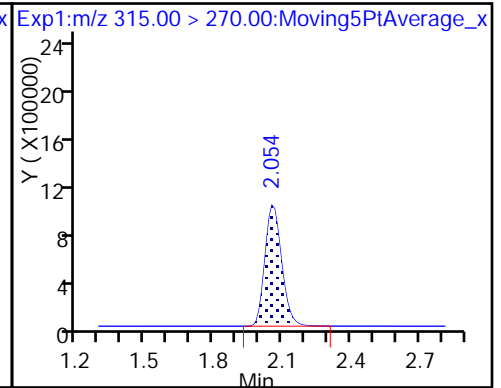
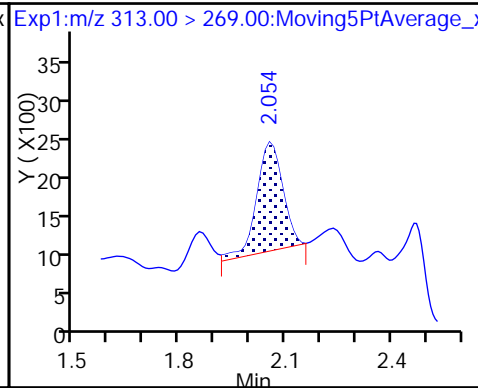
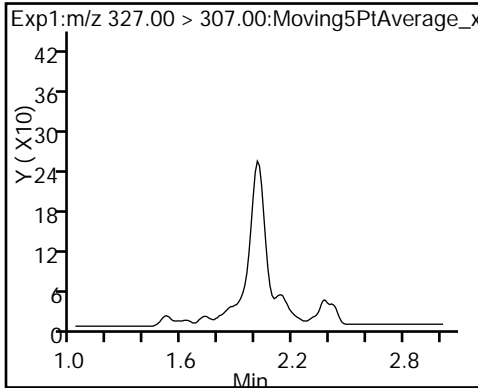
5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid (ND)

6 Perfluorohexanoic acid

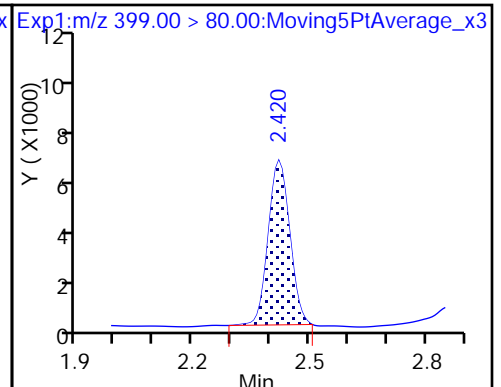
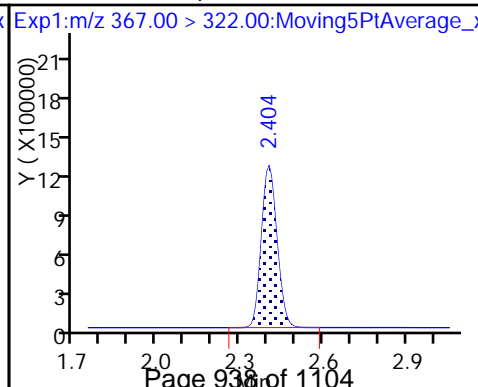
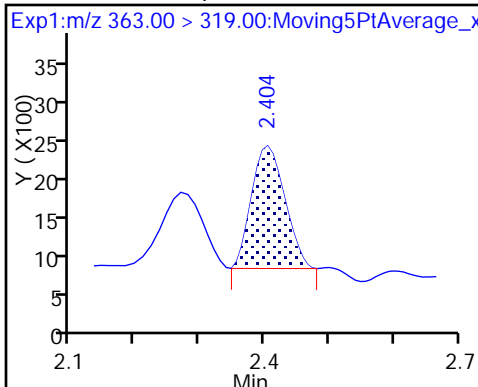
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

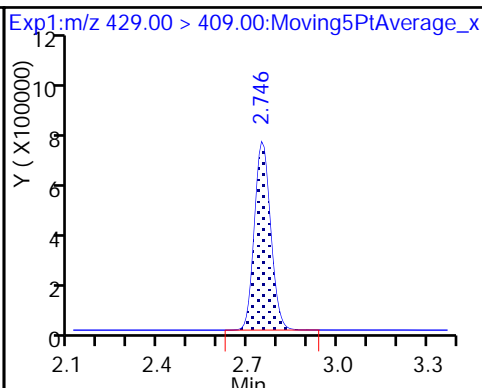
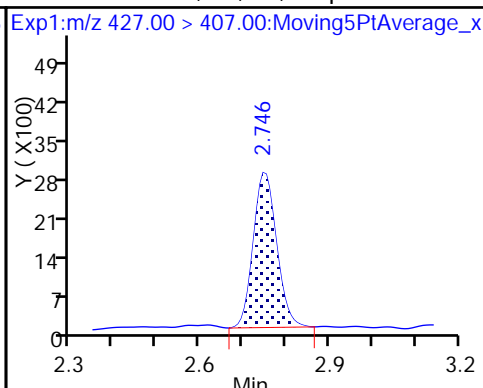
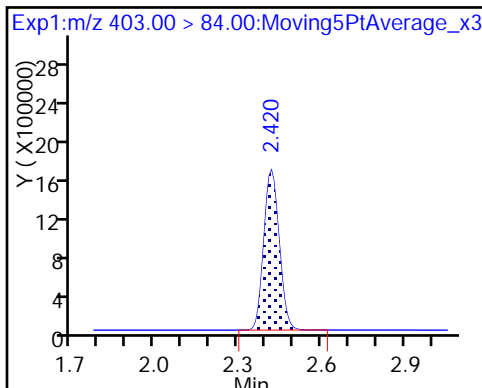
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctanoate

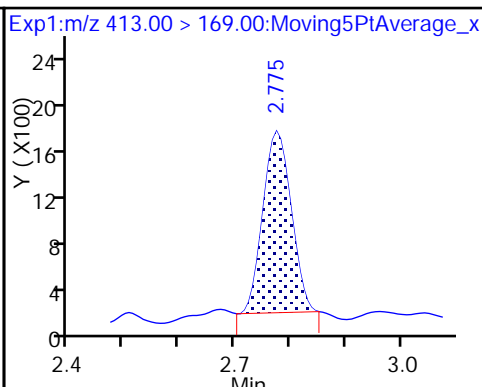
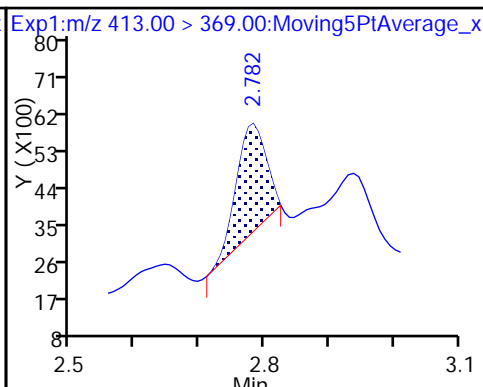
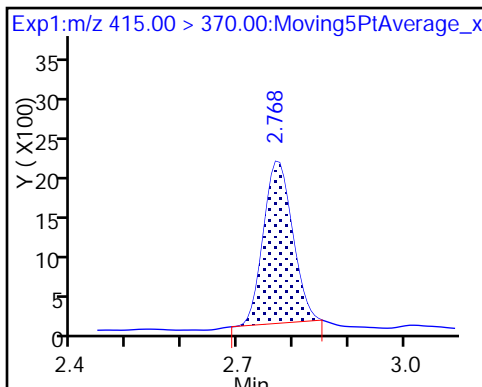
D 12 M2-6:2FTS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

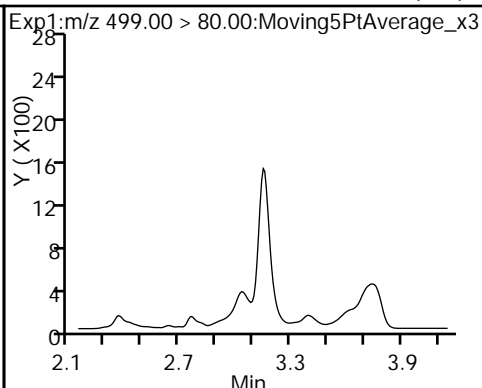
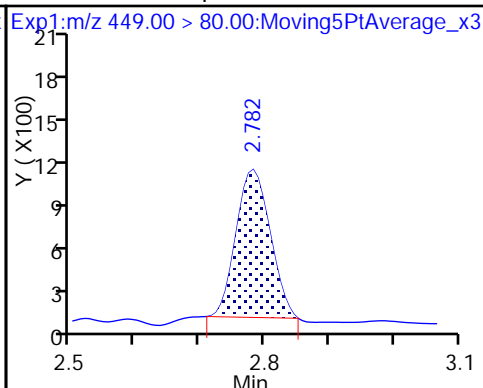
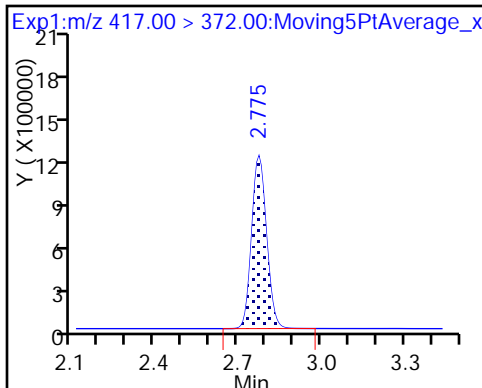
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

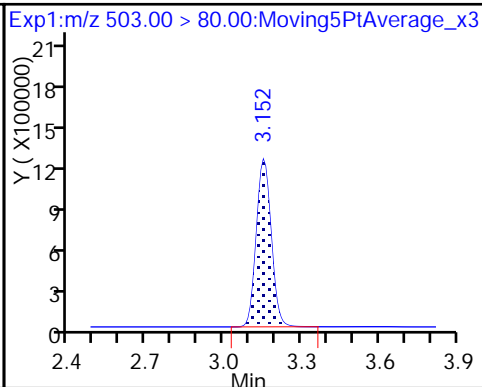
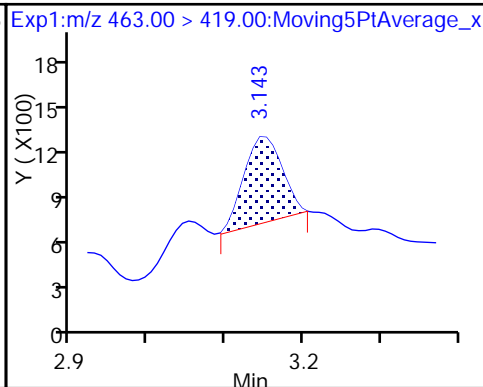
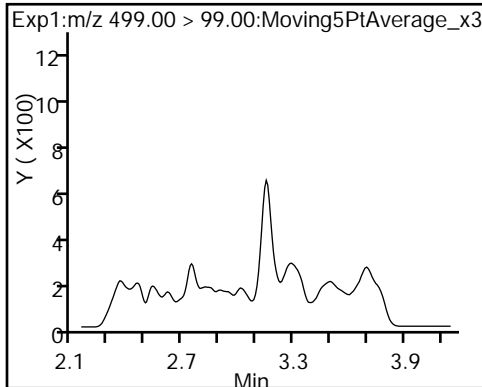
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

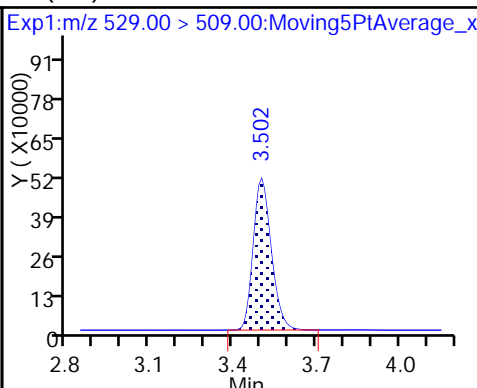
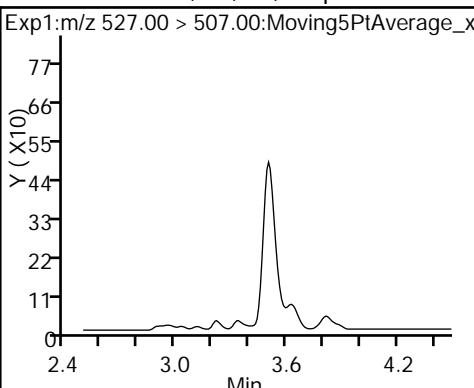
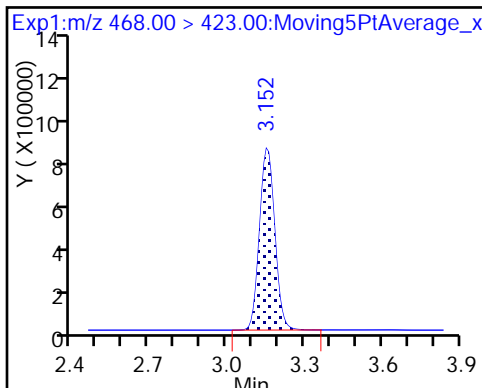
20 Perfluorononanoic acid

D 18 13C4 PFOS



D 19 13C5 PFNA

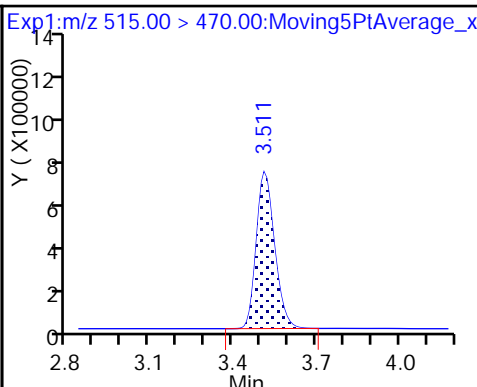
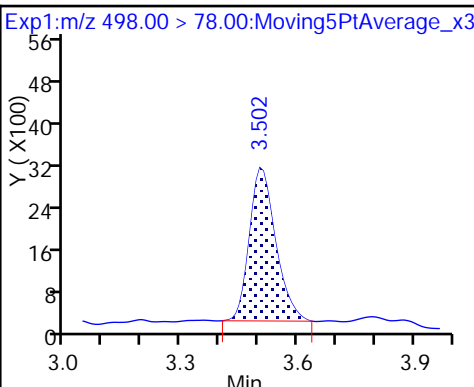
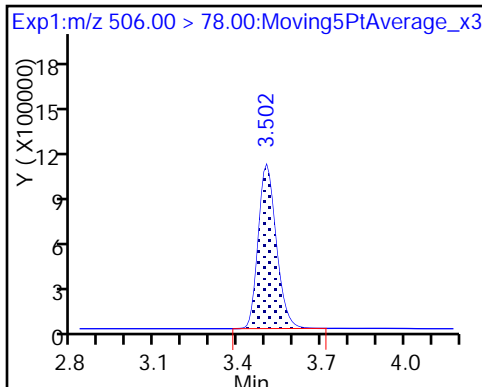
25 Sodium 1H,1H,2H,2H-perfluorodecanoate (ND)



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

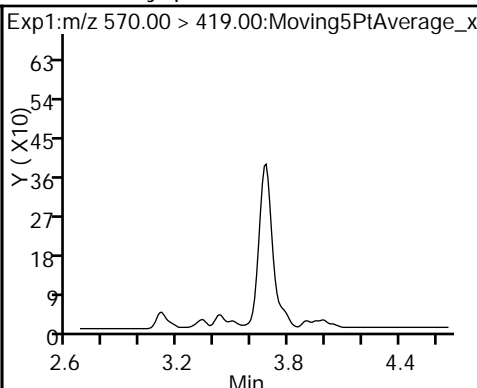
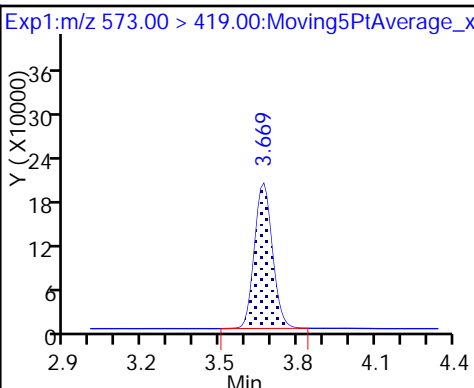
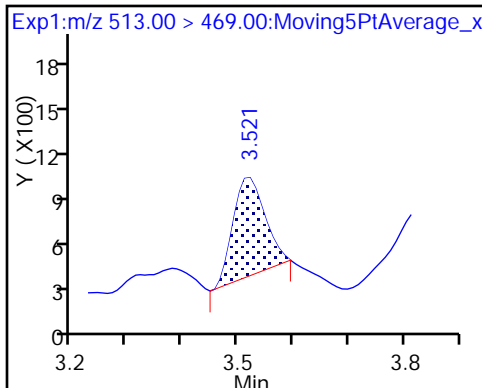
D 23 13C2 PFDA



24 Perfluorodecanoic acid

D 27 d3-NMeFOSAA

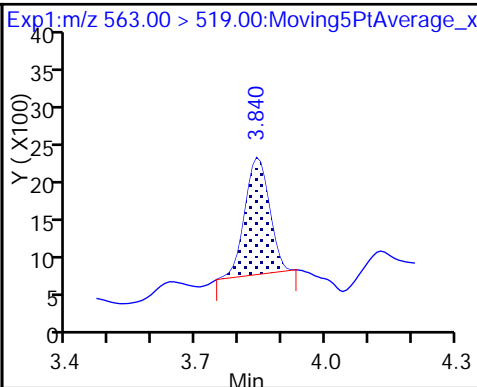
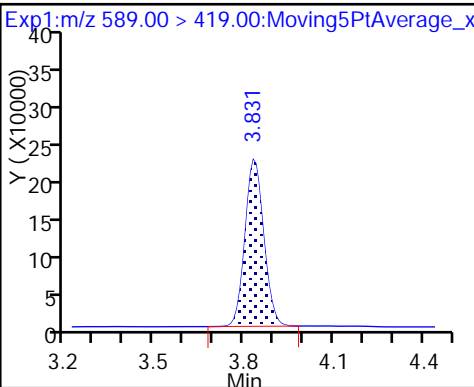
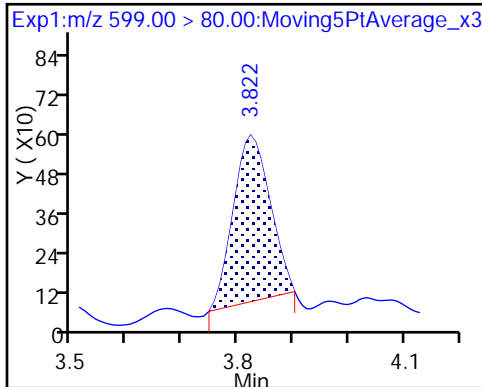
28 N-methyl perfluorooctane sulfonami (ND)



29 Perfluorodecane Sulfonic acid

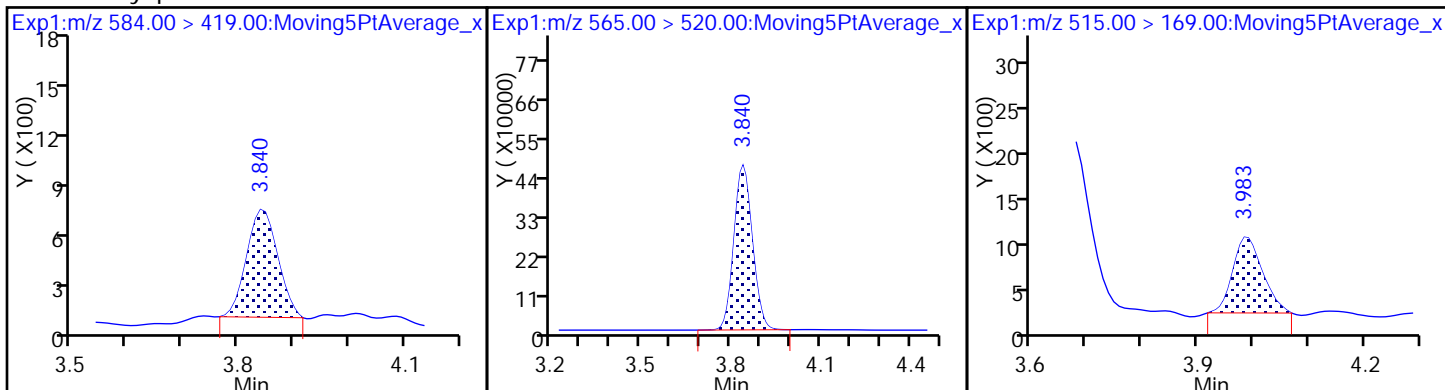
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

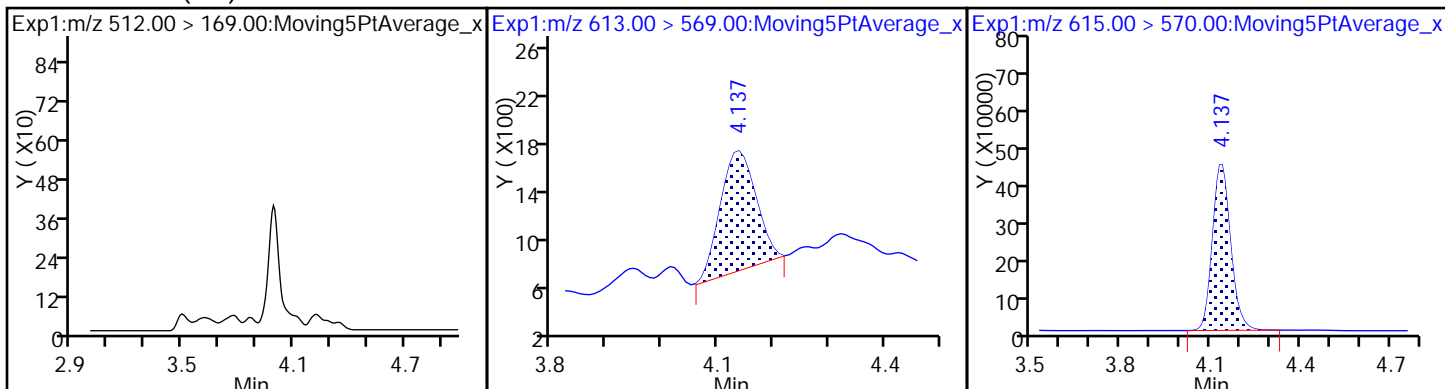
D 34 d-N-MeFOSA-M



35 MeFOSA (ND)

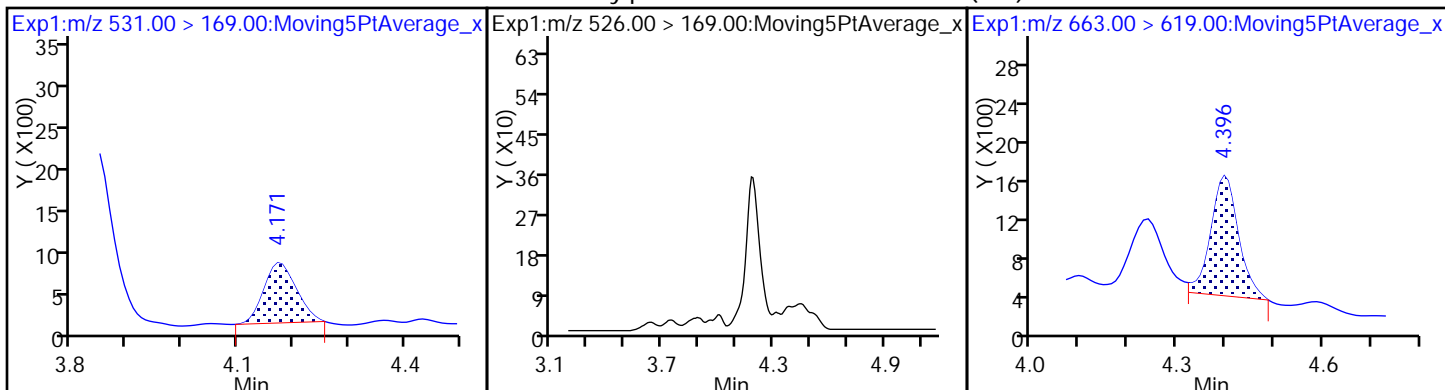
37 Perfluorododecanoic acid

D 36 13C2 PFDa



D 38 d-N-EtFOSA-M

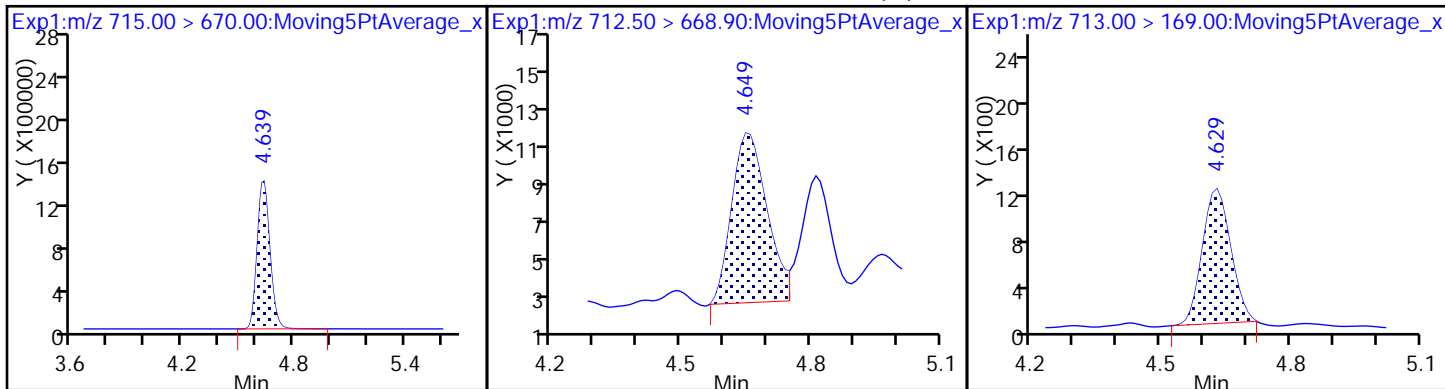
39 N-ethylperfluoro-1-octanesulfonami (ND) Perfluorotridecanoic acid



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid (M)

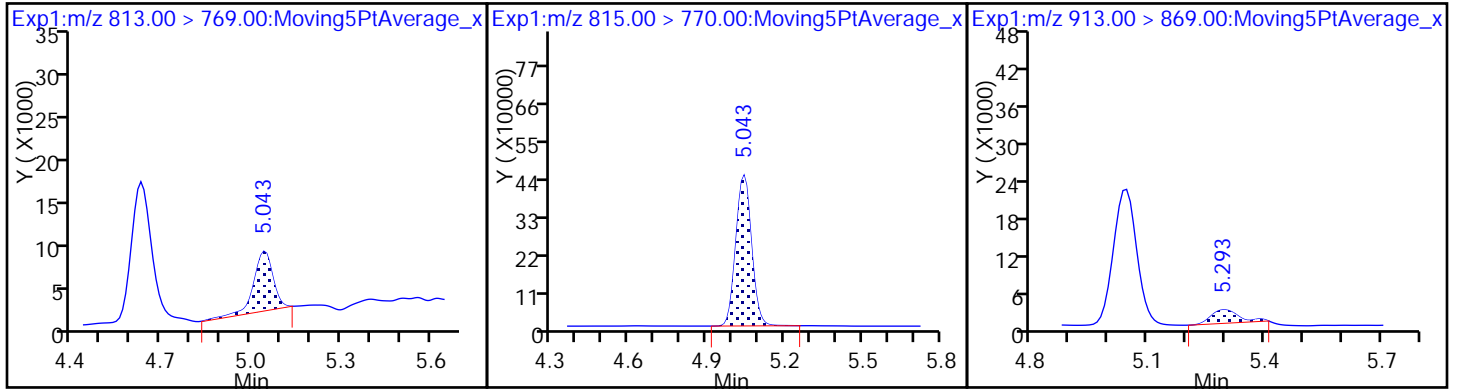
42 Perfluorotetradecanoic acid



45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-175742/1-A
 Matrix: Water Lab File ID: 2017.07.27C_002.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/25/2017 09:12
 Sample wt/vol: 250.00 (mL) Date Analyzed: 07/27/2017 20:55
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 176487 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|------------------------------------|--------|---|-----|-----|------|
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.0 | U | 40 | 2.0 | 0.64 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 63 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_002.d
 Lims ID: MB 320-175742/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 27-Jul-2017 20:55:46 ALS Bottle#: 25 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-175742/1-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 28-Jul-2017 14:14:10 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: barnettj Date: 28-Jul-2017 13:43:18

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | | | | | | | | | | M |
| 212.90 > 169.00 | 1.570 | 1.565 | 0.005 | 1.000 | 8776 | 0.0522 | | | 2.7 | M |
| D 1 13C4 PFBA | | | | | | | | | | |
| 217.00 > 172.00 | 1.570 | 1.565 | 0.005 | | 9537987 | 61.1 | | 122 | 21899 | |
| D 3 13C5-PFPeA | | | | | | | | | | |
| 267.90 > 223.00 | 1.789 | 1.784 | 0.005 | | 7115090 | 64.4 | | 129 | 31865 | |
| D 47 13C3-PFBS | | | | | | | | | | |
| 301.90 > 83.00 | 1.818 | 1.802 | 0.016 | | 150598 | NC | | | 5526 | |
| 5 Perfluorobutanesulfonic acid | | | | | | | | | | M |
| 298.90 > 80.00 | 1.807 | 1.812 | -0.005 | 1.000 | 6977 | 0.0284 | | | 5.6 | |
| 298.90 > 99.00 | 1.807 | 1.812 | -0.005 | 1.000 | 1790 | | 3.90(0.00-0.00) | | 3.0 | M |
| 6 Perfluorohexanoic acid | | | | | | | | | | |
| 313.00 > 269.00 | 2.061 | 2.054 | 0.007 | 1.000 | 9174 | 0.0752 | | | 14.1 | |
| D 7 13C2 PFHxA | | | | | | | | | | |
| 315.00 > 270.00 | 2.072 | 2.054 | 0.018 | | 6404232 | 63.3 | | 127 | 19951 | |
| 10 Perfluoroheptanoic acid | | | | | | | | | | M |
| 363.00 > 319.00 | 2.397 | 2.385 | 0.012 | 1.000 | 6772 | 0.0517 | | | 7.1 | M |
| D 9 13C4-PFHpA | | | | | | | | | | |
| 367.00 > 322.00 | 2.397 | 2.385 | 0.012 | | 6377220 | 76.1 | | 152 | 16415 | |
| 8 Perfluorohexanesulfonic acid | | | | | | | | | | |
| 399.00 > 80.00 | 2.413 | 2.401 | 0.012 | 1.000 | 28467 | 0.1592 | | | 43.3 | |
| D 11 18O2 PFHxS | | | | | | | | | | |
| 403.00 > 84.00 | 2.413 | 2.401 | 0.012 | | 7817310 | 56.9 | | 120 | 16573 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | | | | | | | | | | |
| 427.00 > 407.00 | 2.740 | 2.711 | 0.029 | 1.000 | 9703 | 0.1712 | | | 315 | |
| D 12 M2-6:2FTS | | | | | | | | | | |
| 429.00 > 409.00 | 2.733 | 2.711 | 0.022 | | 3004868 | 63.2 | | 133 | 15059 | |
| * 62 13C2-PFOA | | | | | | | | | | |
| 415.00 > 370.00 | 2.762 | 2.733 | 0.029 | | 8046 | 50.0 | | | 305 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.769 | 2.740 | 0.029 | 1.000 | 9470 | 0.0775 | | | 2.0 | |
| 413.00 > 169.00 | 2.762 | 2.740 | 0.022 | 0.997 | 8979 | | 1.05(0.90-1.10) | | 63.9 | |
| D 14 13C4 PFOA | | | | | | | | | | |
| 417.00 > 372.00 | 2.762 | 2.740 | 0.022 | | 5729057 | 69.7 | | 139 | 14895 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.769 | 2.747 | 0.022 | 1.000 | 2811 | 0.0229 | | | 68.7 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.136 | 3.111 | 0.025 | | 4215066 | 64.1 | | 128 | 13231 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.136 | 3.111 | 0.025 | | 5235428 | 48.4 | | 101 | 15022 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.486 | 3.454 | 0.032 | 1.000 | 22146 | 0.2138 | | | 250 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.486 | 3.454 | 0.032 | | 5742570 | 31.4 | | 62.8 | 10157 | |
| D 26 M2-8:2FTS | | | | | | | | | | |
| 529.00 > 509.00 | 3.486 | 3.454 | 0.032 | | 2890718 | 79.2 | | 165 | 12787 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.495 | 3.474 | 0.021 | 1.000 | 2418 | 0.0300 | | | 9.6 | M |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.495 | 3.474 | 0.021 | | 4108671 | 73.6 | | 147 | 8312 | |
| D 27 d3-NMeFOSAA | | | | | | | | | | |
| 573.00 > 419.00 | 3.649 | 3.631 | 0.018 | | 1195468 | 55.0 | | 110 | 8869 | |
| D 32 d5-NEtFOSAA | | | | | | | | | | |
| 589.00 > 419.00 | 3.814 | 3.787 | 0.027 | | 1240192 | 56.5 | | 113 | 3263 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.823 | 3.797 | 0.026 | 1.000 | 9207 | 0.0618 | | | 16.3 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.823 | 3.797 | 0.026 | | 2678240 | 65.8 | | 132 | 6605 | |
| D 34 d-N-MeFOSA-M | | | | | | | | | | |
| 515.00 > 169.00 | 3.981 | 3.956 | 0.025 | | 3378 | 0.0717 | | 0.1 | 1.0 | |
| D 36 13C2 PFDoA | | | | | | | | | | |
| 615.00 > 570.00 | 4.115 | 4.088 | 0.027 | | 2469707 | 55.3 | | 111 | 4482 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.123 | 4.096 | 0.027 | 1.000 | 2307 | 0.0503 | | | 2.8 | |
| D 38 d-N-EtFOSA-M | | | | | | | | | | |
| 531.00 > 169.00 | 4.166 | 4.147 | 0.019 | | 3959 | 0.0811 | | 0.2 | 14.7 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.213 | 4.358 | -0.145 | 1.000 | 3774 | 0.0897 | | | 0.8 | |
| D 43 13C2-PFTeDA | | | | | | | | | | |
| 715.00 > 670.00 | 4.617 | 4.593 | 0.024 | | 6627597 | 81.6 | | 163 | 7714 | |
| D 44 13C2-PFHxDA | | | | | | | | | | |
| 815.00 > 770.00 | 5.032 | 5.005 | 0.027 | | 2572992 | 62.3 | | 125 | 1401 | |
| 45 Perfluorohexadecanoic acid | | | | | | | | | | |
| 813.00 > 769.00 | 5.032 | 5.015 | 0.017 | 1.000 | 49980 | 0.6121 | | | 4.8 | |
| 46 Perfluorooctadecanoic acid | | | | | | | | | | |
| 913.00 > 869.00 | 5.380 | 5.365 | 0.015 | 1.000 | 7110 | 0.1881 | | | 2.0 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_002.d

Injection Date: 27-Jul-2017 20:55:46

Instrument ID: A8_N

Lims ID: MB 320-175742/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 25

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

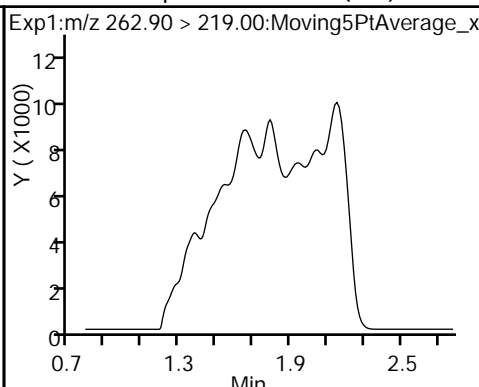
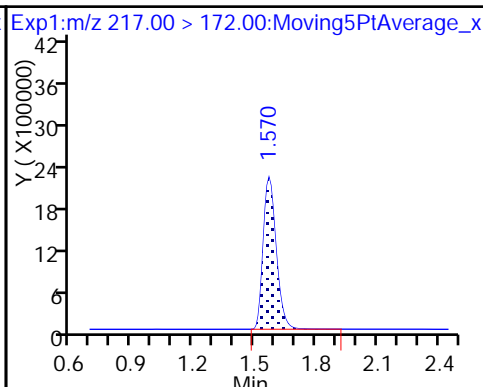
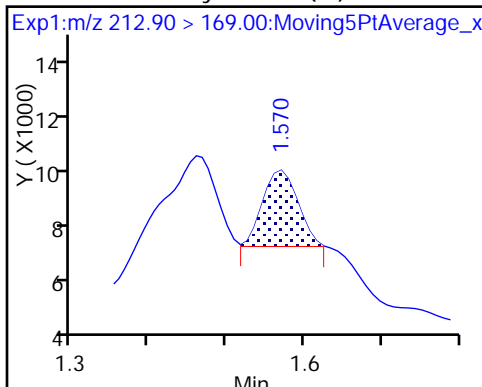
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid (M)

D 1 13C4 PFBA

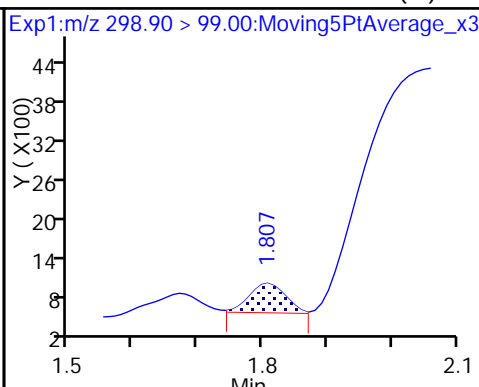
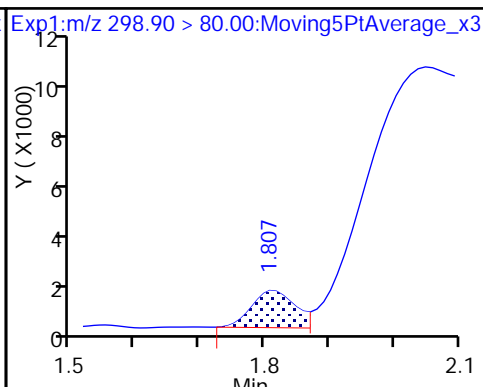
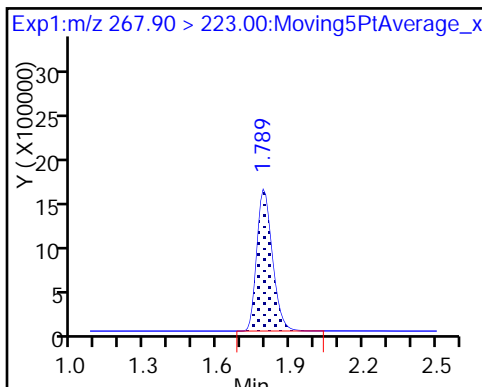
4 Perfluoropentanoic acid (ND)



D 3 13C5-PFPeA

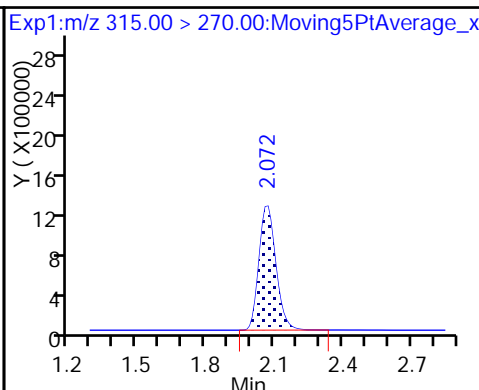
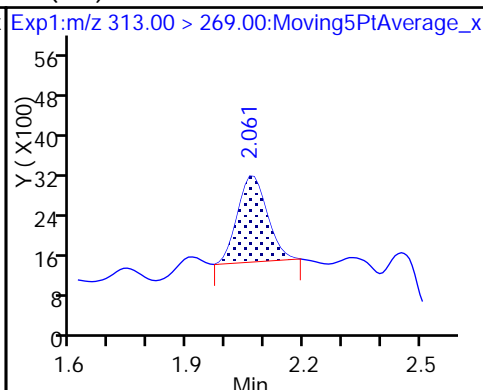
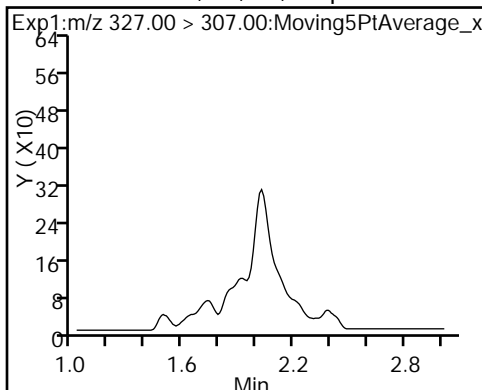
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid (M)



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid (ND)

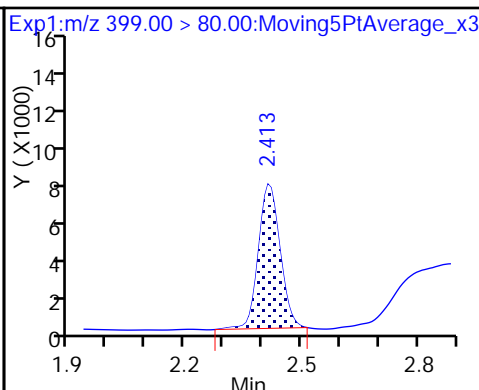
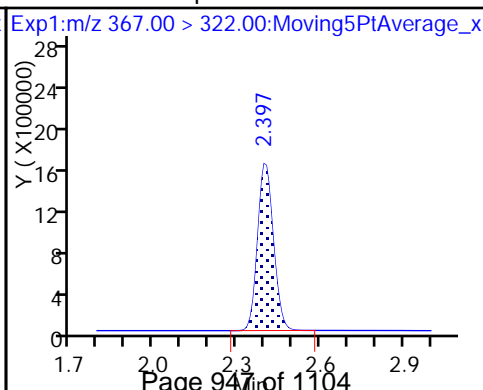
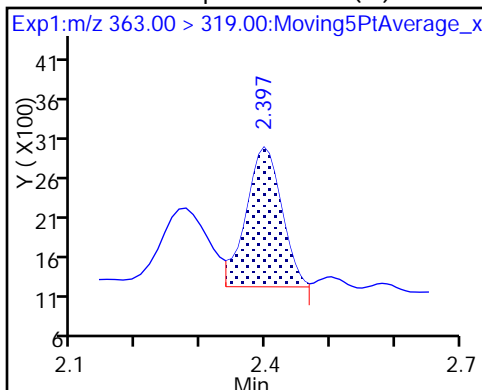
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid (M)

D 9 13C4-PFHpA

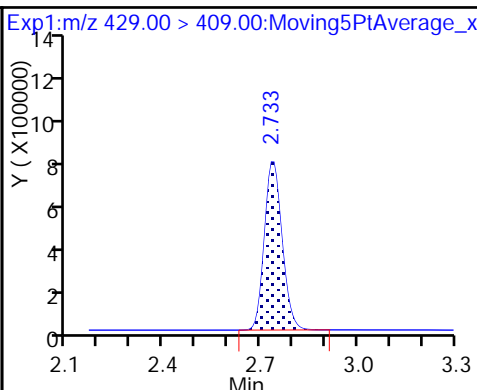
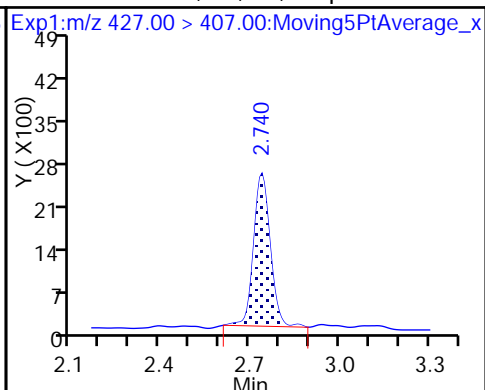
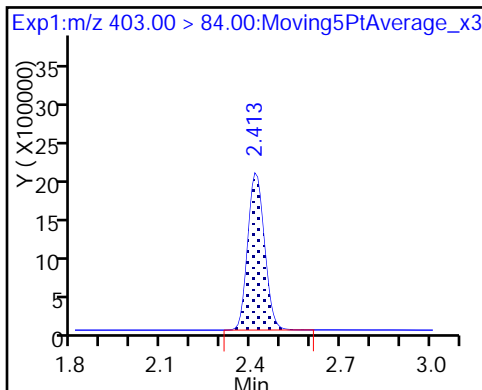
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

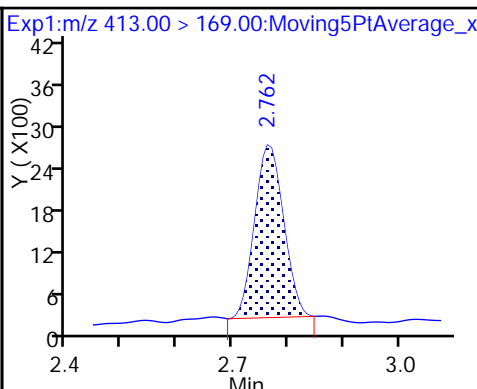
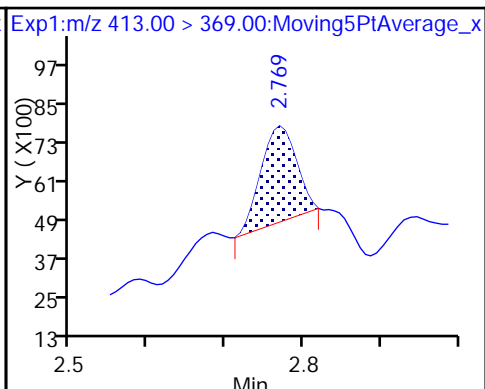
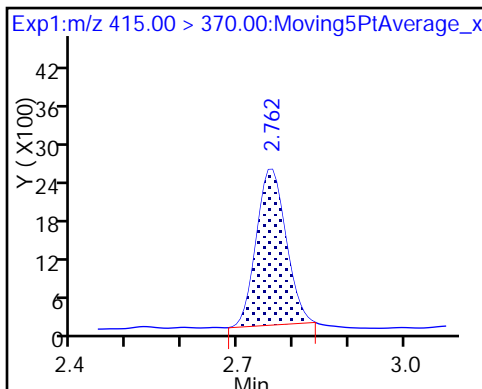
D 12 M2-6:2FTS



* 62 13C2-PFOA

15 Perfluorooctanoic acid

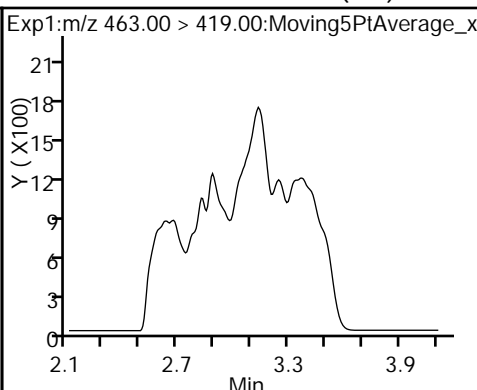
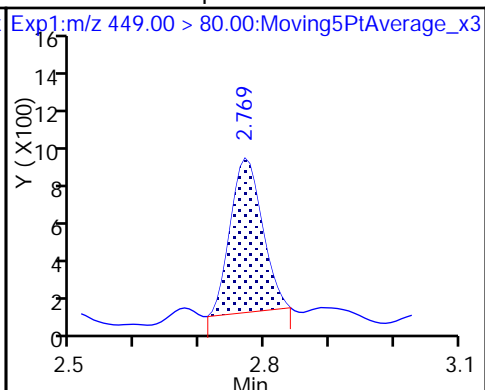
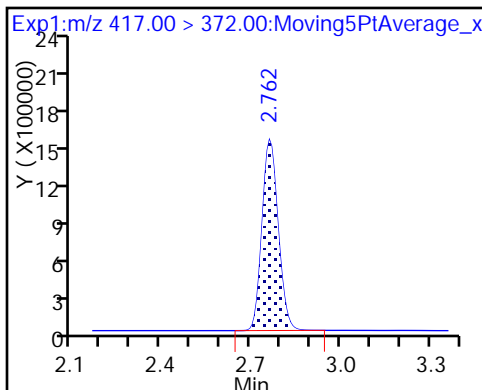
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic Acid

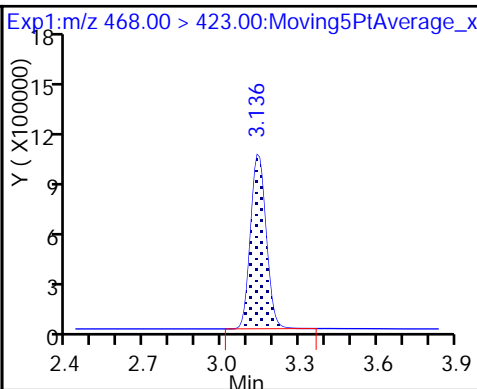
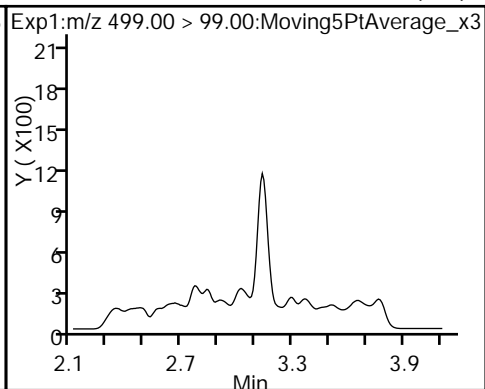
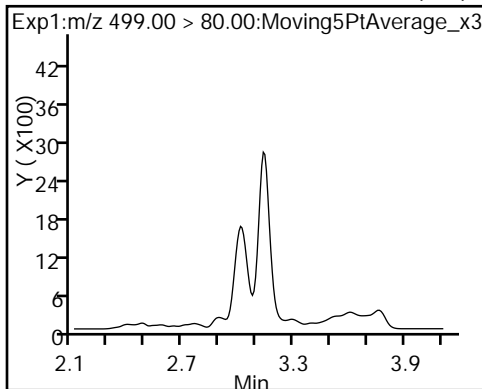
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

17 Perfluorooctane sulfonic acid (ND)

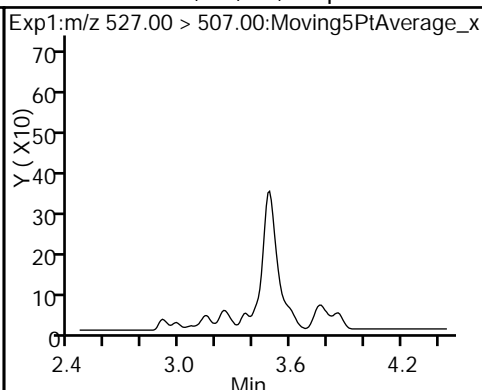
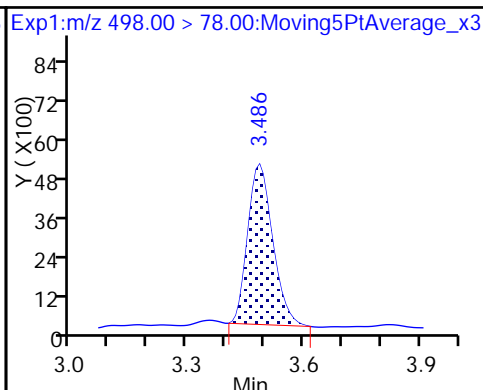
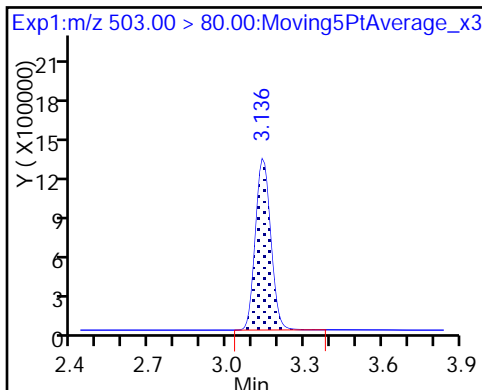
D 19 13C5 PFNA



D 18 13C4 PFOS

22 Perfluorooctane Sulfonamide

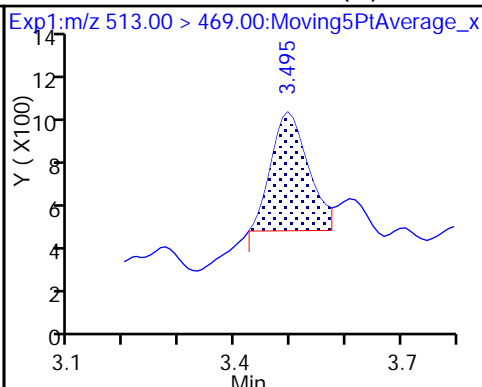
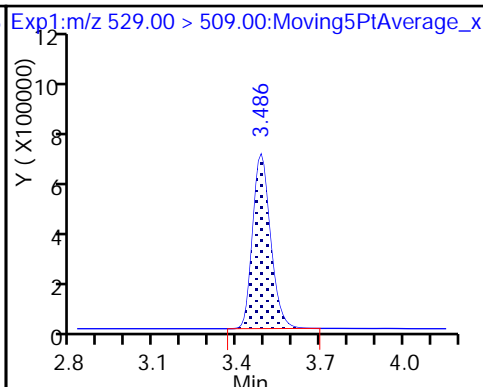
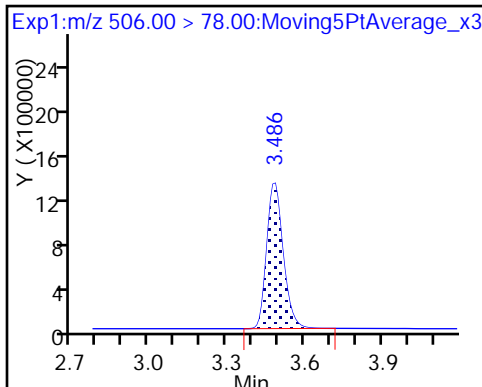
25 Sodium 1H,1H,2H,2H-perfluorodecane (ND)



D 21 13C8 FOSA

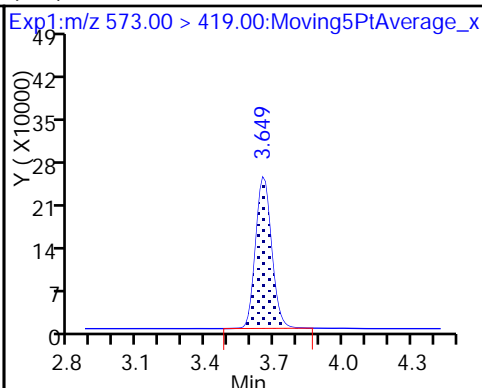
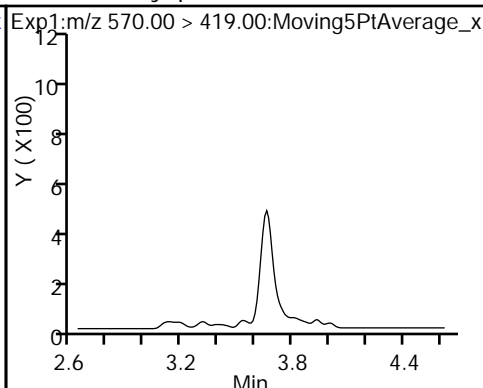
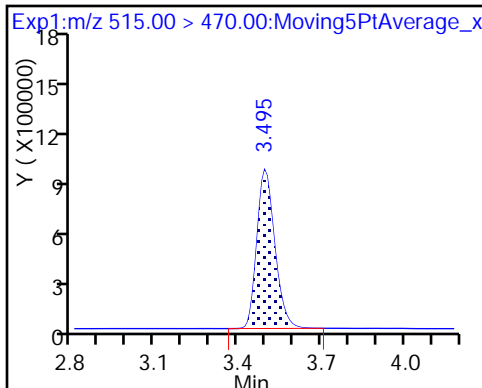
D 26 M2-8:2FTS

24 Perfluorodecanoic acid (M)



D 23 13C2 PFDA

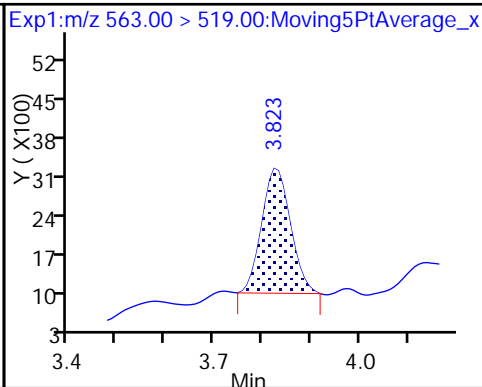
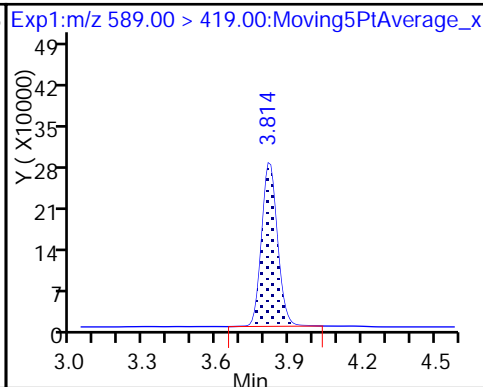
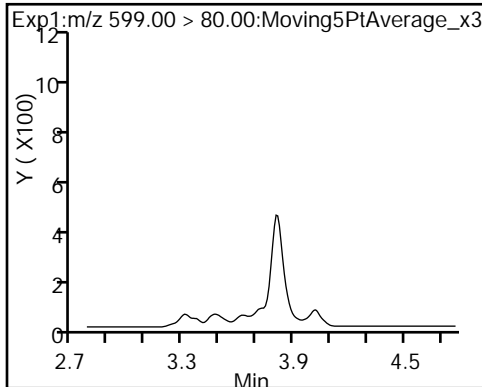
28 N-methyl perfluorooctane sulfonamide (ND) d3-NMeFOSAA



29 Perfluorodecane Sulfonic acid (ND)

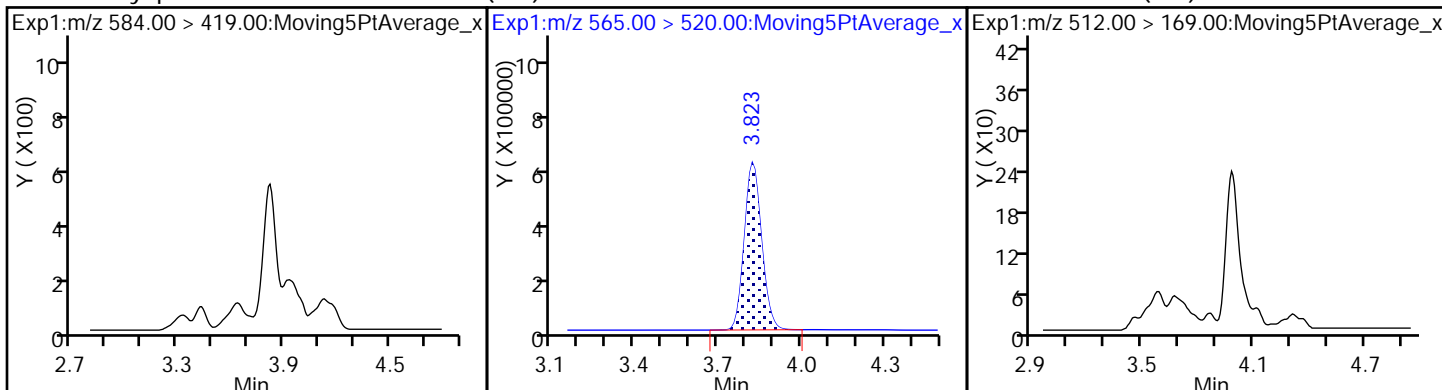
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid (ND) 13C2 PFUnA

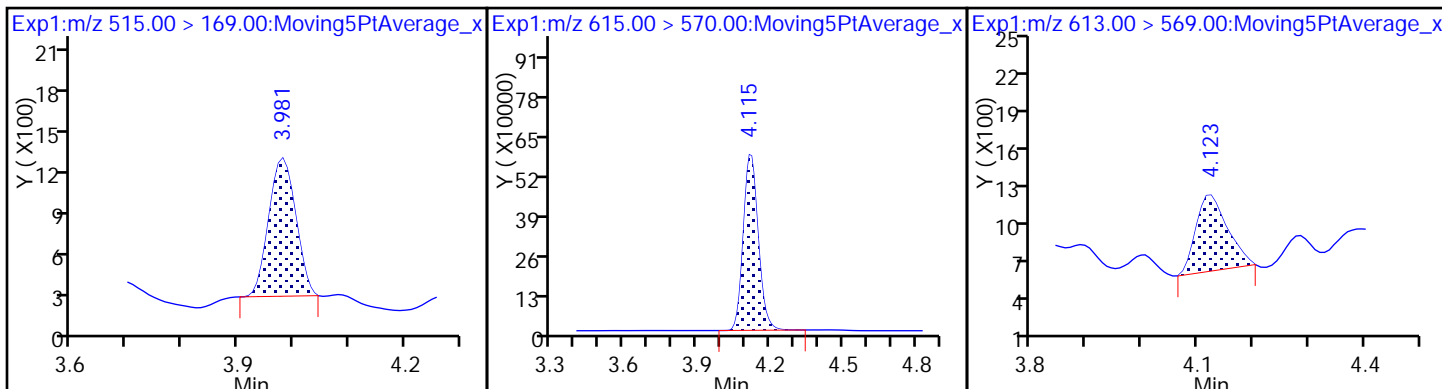
35 MeFOSA (ND)



D 34 d-N-MeFOSA-M

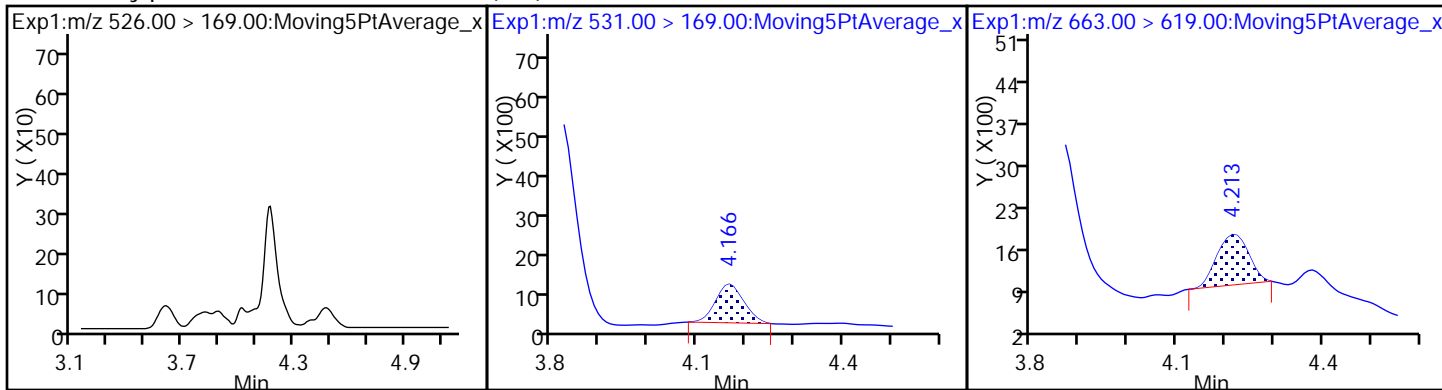
D 36 13C2 PFDaA

37 Perfluorododecanoic acid



39 N-ethylperfluoro-1-octanesulfonamid (ND) d-N-EtFOSA-M

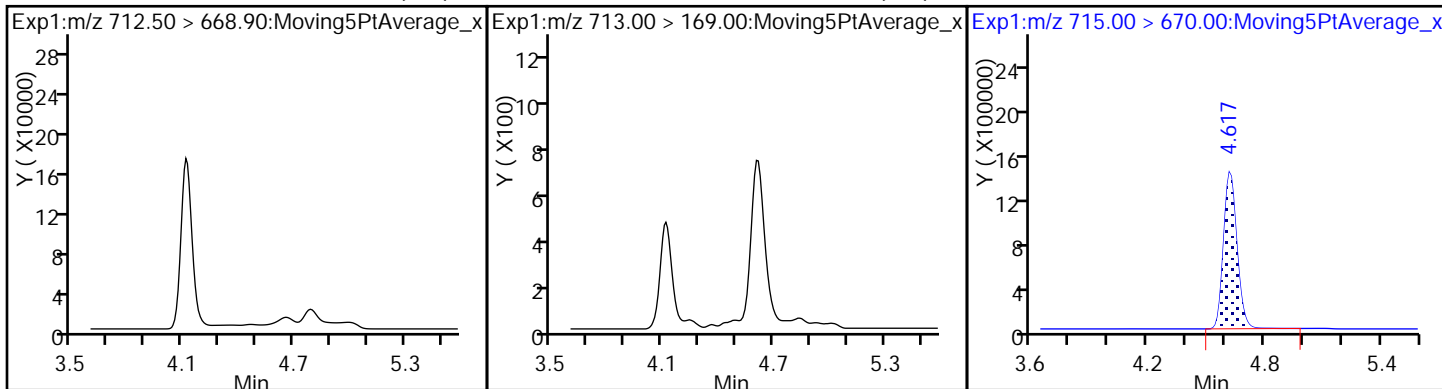
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)

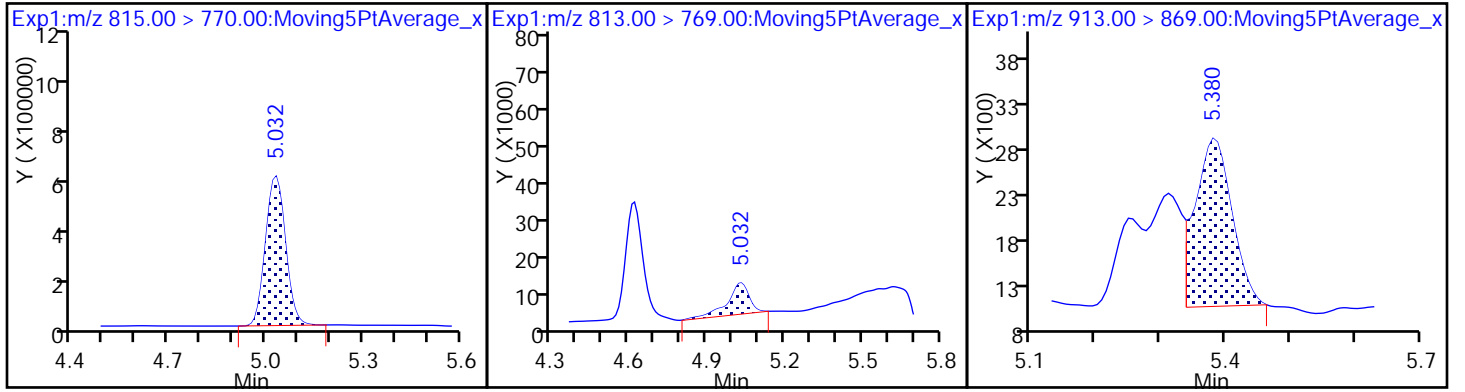
D 43 13C2-PFTeDA



D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-174599/2-A
 Matrix: Water Lab File ID: 2017.07.21C_017.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 250 (mL) Date Analyzed: 07/21/2017 20:52
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|---|-----|-----|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 44.8 | | 2.5 | 1.0 | 0.46 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 42.2 | | 2.5 | 2.0 | 0.99 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 42.7 | | 2.5 | 2.0 | 0.79 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 40.6 | | 2.5 | 2.0 | 0.80 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 42.1 | | 2.5 | 2.0 | 0.75 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 42.6 | | 2.5 | 2.0 | 0.65 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 43.8 | | 2.5 | 1.0 | 0.44 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 43.8 | | 2.5 | 2.0 | 0.75 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 43.5 | | 2.5 | 2.0 | 0.58 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 43.4 | | 2.5 | 2.0 | 0.55 |
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 48.6 | | 2.5 | 1.0 | 0.40 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 38.5 | | 2.5 | 2.0 | 0.92 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 38.9 | | 2.5 | 2.0 | 0.87 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 44.7 | | 2.5 | 2.0 | 0.71 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 40.0 | | 4.0 | 3.0 | 1.3 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 39.6 | | 4.0 | 3.0 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 42.9 | | 40 | 2.0 | 0.64 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-174599/2-A
 Matrix: Water Lab File ID: 2017.07.21C_017.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 250 (mL) Date Analyzed: 07/21/2017 20:52
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 17 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 100 | | 25-150 |
| STL00993 | 13C2 PFHxA | 102 | | 25-150 |
| STL00990 | 13C4 PFOA | 119 | | 25-150 |
| STL00995 | 13C5 PFNA | 109 | | 25-150 |
| STL00996 | 13C2 PFDA | 126 | | 25-150 |
| STL00997 | 13C2 PFUnA | 110 | | 25-150 |
| STL00998 | 13C2 PFDoA | 97 | | 25-150 |
| STL00994 | 18O2 PFHxS | 97 | | 25-150 |
| STL00991 | 13C4 PFOS | 93 | | 25-150 |
| STL01892 | 13C4-PFHpA | 135 | | 25-150 |
| STL01893 | 13C5 PFPeA | 101 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_017.d
 Lims ID: LCS 320-174599/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 21-Jul-2017 20:52:19 ALS Bottle#: 14 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-174599/2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 16:31:26 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:05:22

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.536 | 1.537 | -0.001 | 8968933 | 49.8 | | 99.7 | 27387 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.536 | 1.537 | -0.001 | 1.000 | 3656289 | 22.4 | 112 | 1744 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.736 | 1.727 | 0.009 | 6039692 | 50.5 | | 101 | 44234 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.736 | 1.737 | 0.0 | 1.000 | 2544828 | 21.1 | 106 | 1563 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.754 | 1.755 | -0.001 | 145007 | NC | | | 5046 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.754 | 1.755 | -0.001 | 1.000 | 4258863 | 19.3 | 109 | 2955 | |
| | 298.90 > 99.00 | 1.754 | 1.755 | -0.001 | 1.000 | 1611374 | 2.64(0.00-0.00) | | 2143 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 1.994 | 1.994 | 0.0 | 5657669 | 51.2 | | 102 | 33446 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 1.994 | 1.994 | 0.0 | 1.000 | 2265691 | 21.4 | 107 | 4417 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.312 | 2.316 | -0.004 | 6556866 | 67.4 | | 135 | 37909 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.312 | 2.316 | -0.004 | 1.000 | 2687876 | 20.3 | 102 | 5511 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.328 | 2.324 | 0.004 | 1.000 | 3097609 | 19.5 | 107 | 2714 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.328 | 2.332 | -0.004 | 7358161 | 45.9 | | 97.0 | 33429 | |
| D 14 13C4 PFOA | 417.00 > 372.00 | 2.659 | 2.656 | 0.003 | 5240131 | 59.7 | | 119 | 35239 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.659 | 2.663 | -0.004 | 1.000 | 2307126 | 21.0 | | 105 | 573 | |
| 413.00 > 169.00 | 2.659 | 2.663 | -0.004 | 1.000 | 1419476 | | 1.63(0.90-1.10) | | 6500 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.666 | 2.670 | -0.004 | 1.000 | 2894834 | 22.4 | | 117 | 22142 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.033 | 3.029 | 0.004 | 1.000 | 2278905 | 20.0 | | 108 | 11045 | |
| 499.00 > 99.00 | 3.024 | 3.029 | -0.005 | 0.997 | 470070 | | 4.85(0.90-1.10) | | 3010 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.033 | 3.029 | 0.004 | 1.000 | 1602516 | 21.3 | | 106 | 3800 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.024 | 3.029 | -0.005 | | 5271211 | 44.7 | | 93.4 | 30658 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.024 | 3.029 | -0.005 | | 3765222 | 54.3 | | 109 | 22225 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.381 | 3.380 | 0.001 | 1.000 | 1559293 | 21.9 | | 110 | 5675 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.381 | 3.380 | 0.001 | | 3800172 | 62.8 | | 126 | 17207 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.389 | 3.388 | 0.001 | | 1694412 | 8.63 | | 17.3 | 12110 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.389 | 3.388 | 0.001 | 1.000 | 670908 | 21.4 | | 107 | 9121 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.690 | 3.690 | 0.0 | 1.000 | 1392034 | 19.8 | | 103 | 10701 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.709 | 3.709 | 0.0 | 1.000 | 1025597 | 21.9 | | 109 | 1846 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.709 | 3.709 | 0.0 | | 2310729 | 55.0 | | 110 | 8373 | |
| D 36 13C2 PFDoA | | | | | | | | | | |
| 615.00 > 570.00 | 3.996 | 4.004 | -0.008 | | 2104570 | 48.3 | | 96.6 | 4906 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.003 | 4.004 | -0.001 | 1.000 | 863821 | 21.7 | | 109 | 2182 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.265 | 4.266 | -0.001 | 1.000 | 778174 | 21.7 | | 109 | 320 | |
| D 43 13C2-PFTeDA | | | | | | | | | | |
| 715.00 > 670.00 | 4.497 | 4.498 | -0.001 | | 5189057 | 63.8 | | 128 | 15169 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | |
| 712.50 > 668.90 | 4.497 | 4.498 | -0.001 | 1.000 | 1993142 | 24.3 | | 122 | 758 | |
| 713.00 > 169.00 | 4.497 | 4.498 | -0.001 | 1.000 | 273437 | | 7.29(0.00-0.00) | | 7838 | |
| D 44 13C2-PFHxDA | | | | | | | | | | |
| 815.00 > 770.00 | 4.906 | 4.900 | 0.006 | | 1974687 | 46.5 | | 93.0 | 3241 | |
| 45 Perfluorohexadecanoic acid | | | | | | | | | | |
| 813.00 > 769.00 | 4.906 | 4.910 | -0.004 | 1.000 | 750526 | 20.2 | | 101 | 119 | |
| 46 Perfluorooctadecanoic acid | | | | | | | | | | |
| 913.00 > 869.00 | 5.240 | 5.243 | -0.003 | 1.000 | 607606 | 16.4 | | 82.1 | 320 | |

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_017.d

Injection Date: 21-Jul-2017 20:52:19

Instrument ID: A8_N

Lims ID: LCS 320-174599/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

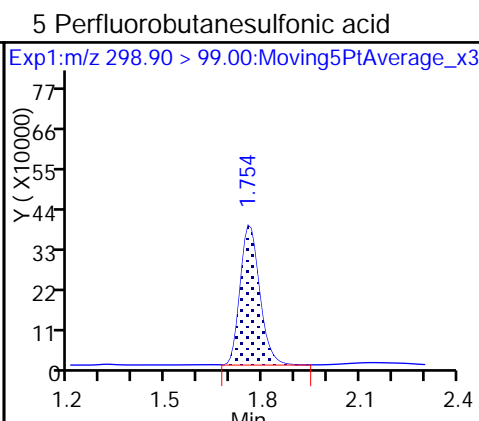
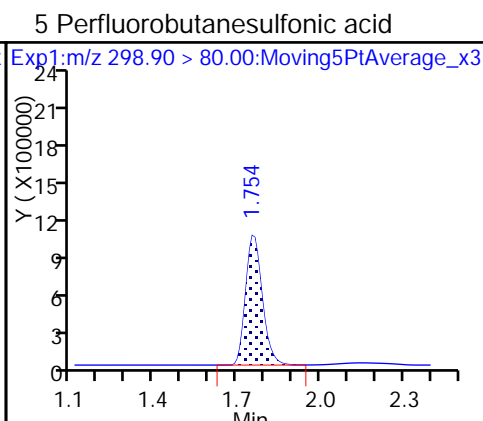
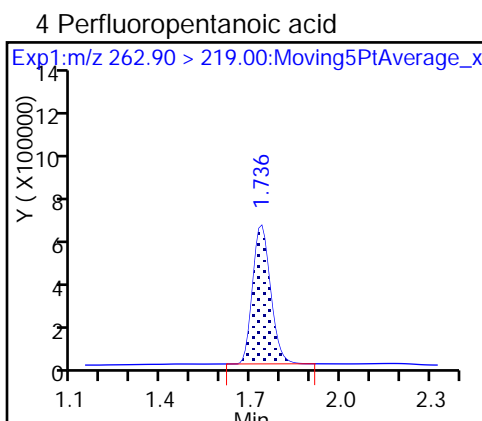
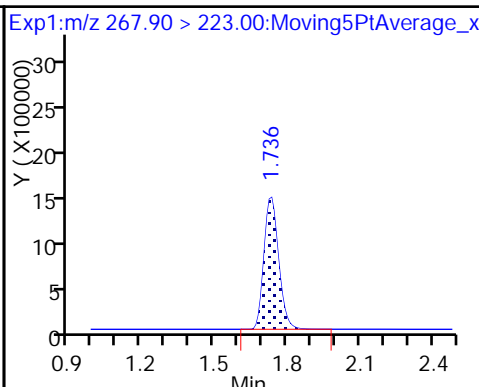
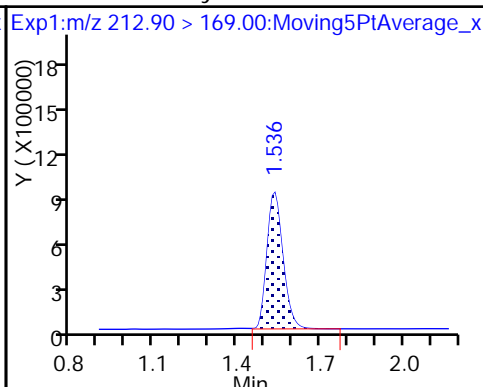
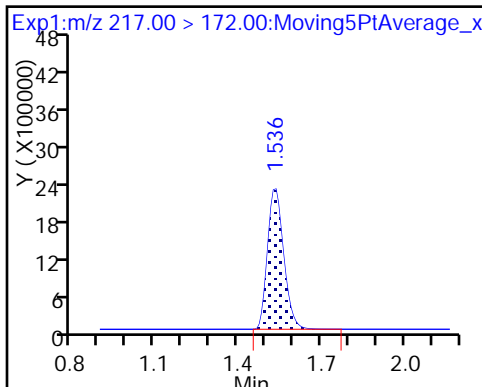
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

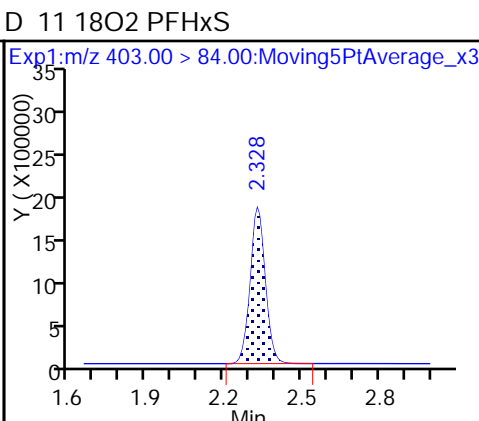
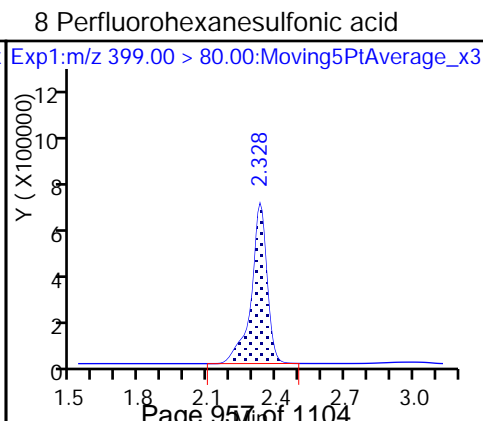
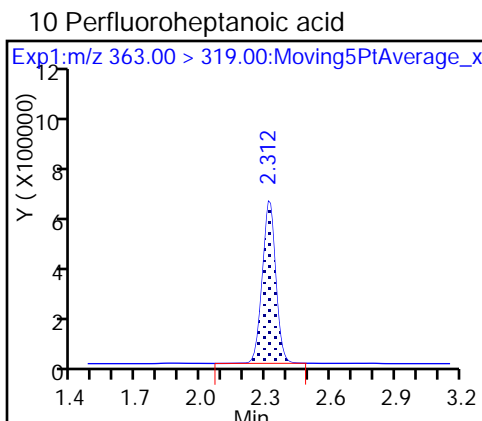
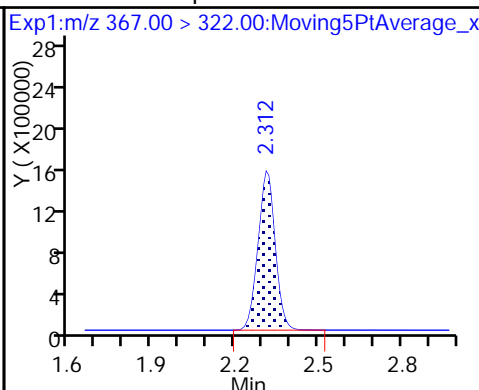
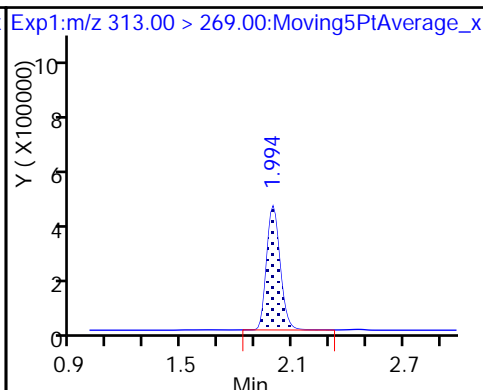
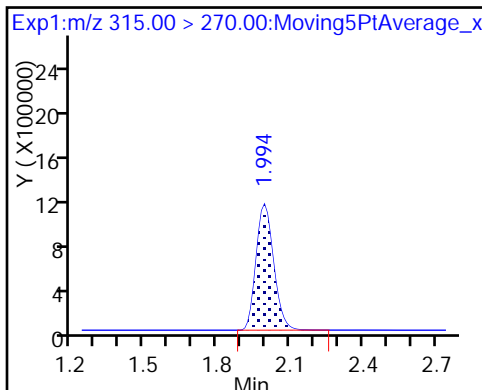
D 3 13C5-PFPeA



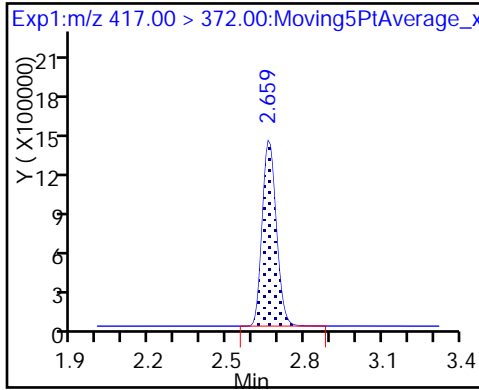
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6 Perfluorohexanoic acid

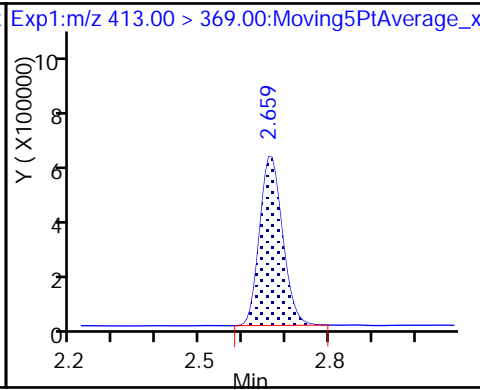
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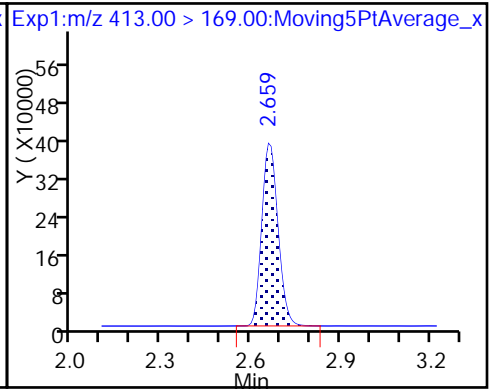
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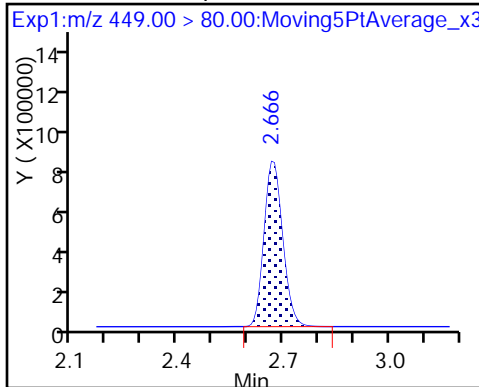
15 Perfluorooctanoic acid



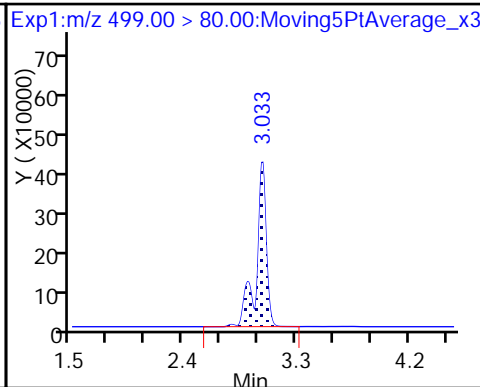
15 Perfluorooctanoic acid



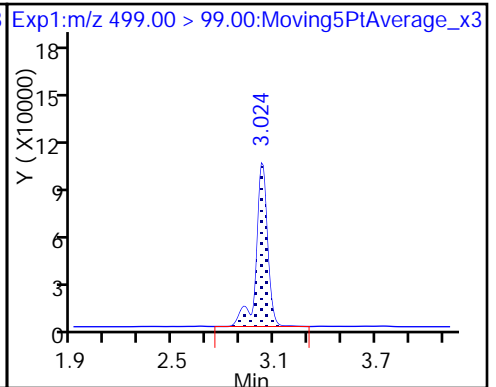
16 Perfluoroheptanesulfonic Acid



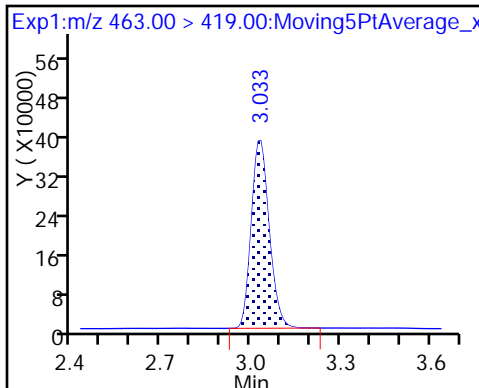
17 Perfluorooctane sulfonic acid



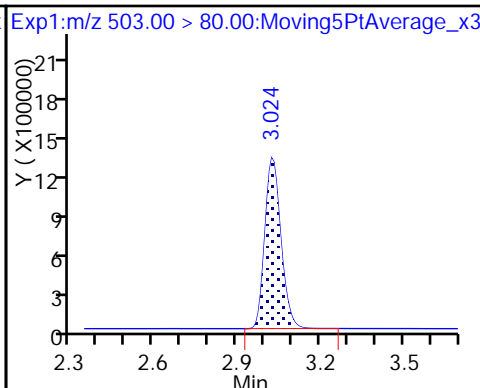
17 Perfluorooctane sulfonic acid



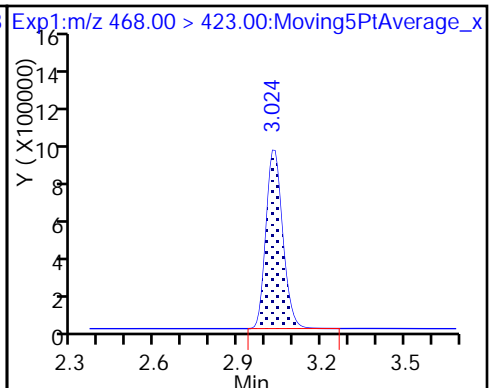
20 Perfluorononanoic acid



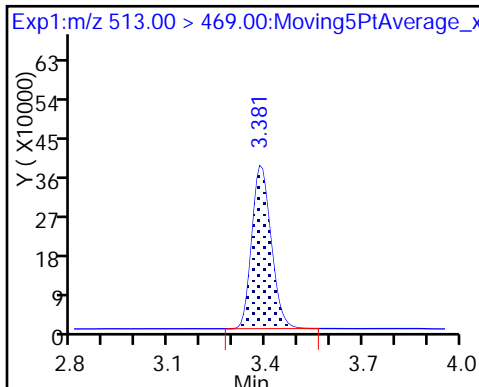
D 18 13C4 PFOS



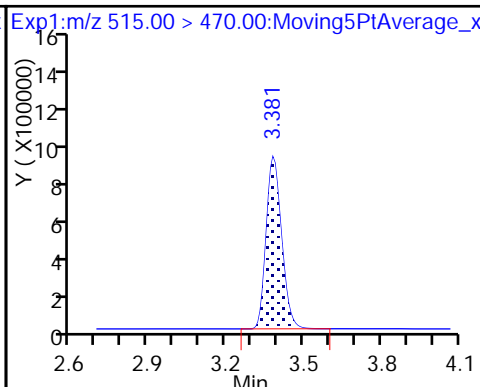
D 19 13C5 PFNA



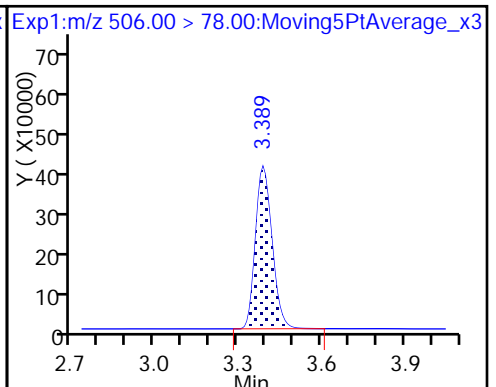
24 Perfluorodecanoic acid



D 23 13C2 PFDA



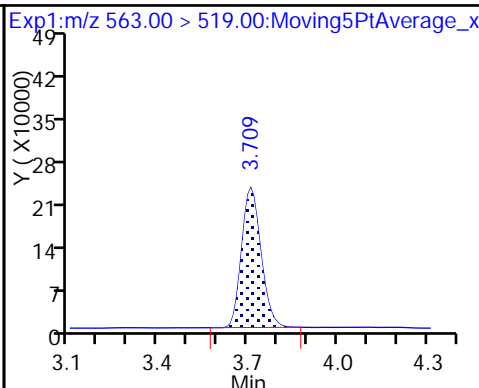
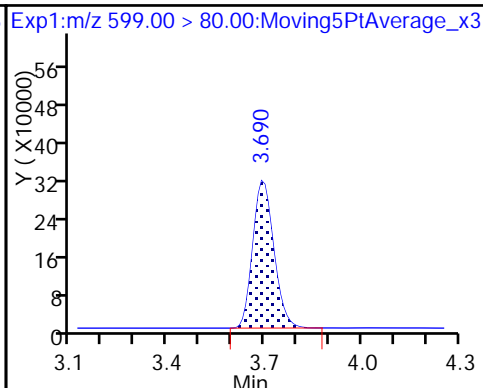
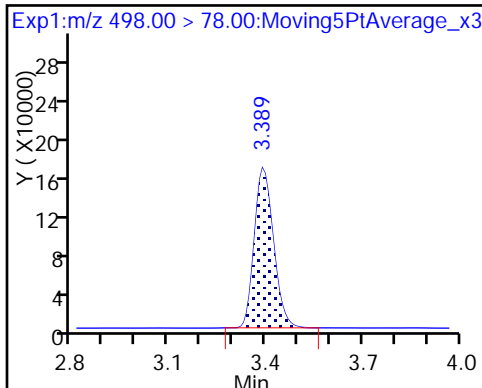
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

29 Perfluorodecane Sulfonic acid

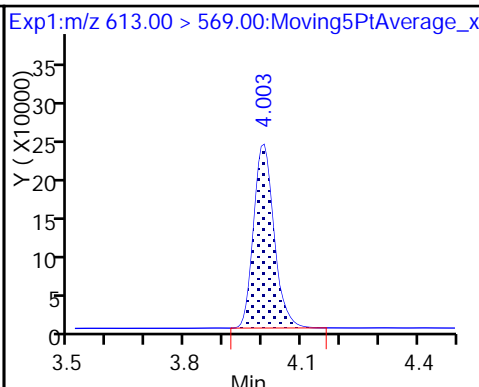
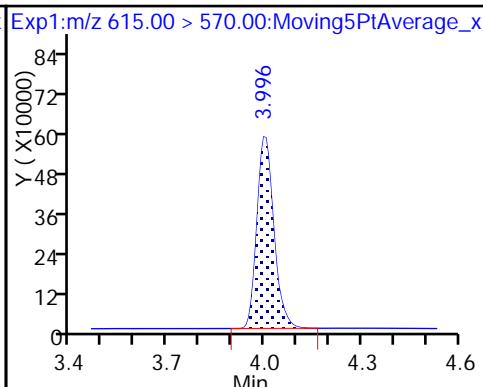
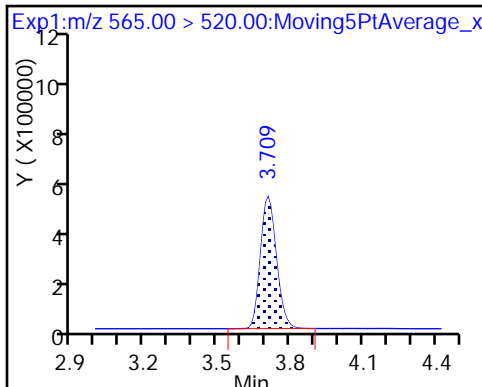
31 Perfluoroundecanoic acid



D 30 13C2 PFUnA

D 36 13C2 PFDaA

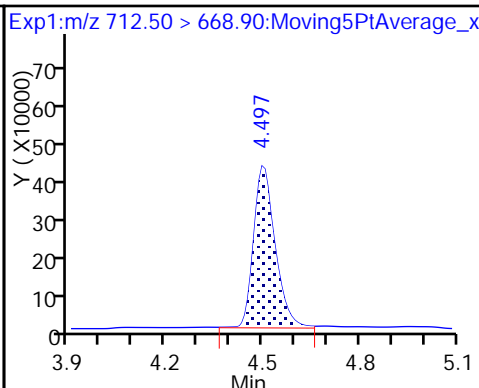
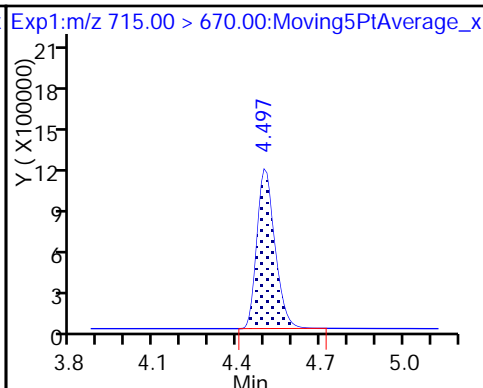
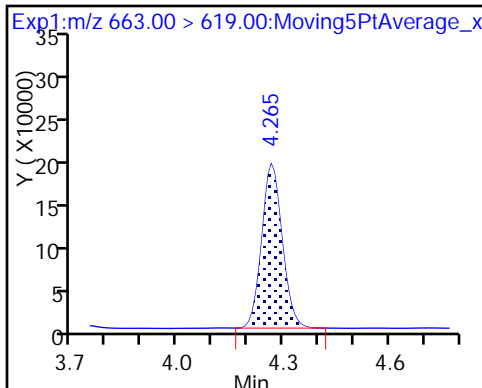
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

D 43 13C2-PFTeDA

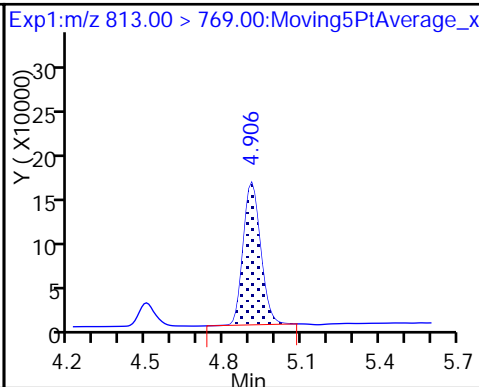
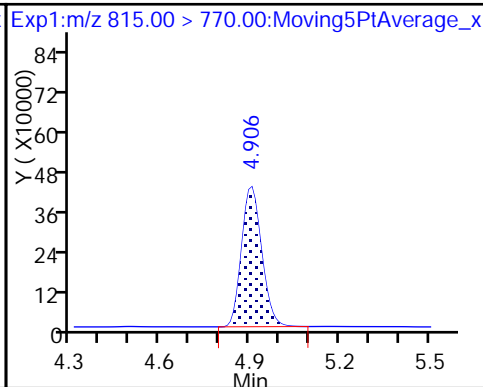
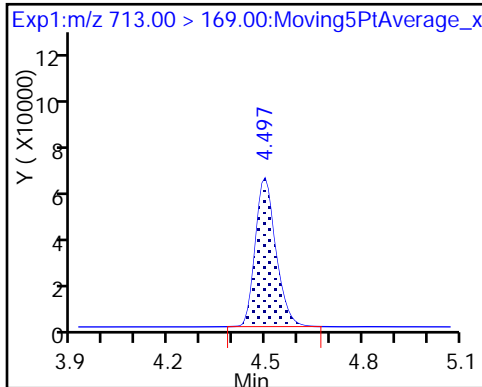
42 Perfluorotetradecanoic acid



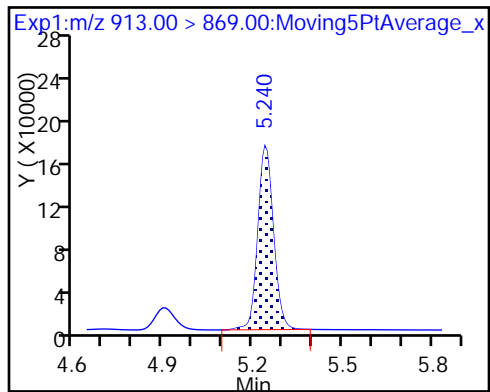
42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-175074/2-A
 Matrix: Water Lab File ID: 2017.07.25B_003.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 09:15
 Sample wt/vol: 250.00 (mL) Date Analyzed: 07/25/2017 14:24
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175951 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|-------------------------------------|--------|---|-----|-----|------|
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 58.6 | | 2.5 | 1.0 | 0.40 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00998 | 13C2 PFDaA | 105 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_003.d
 Lims ID: LCS 320-175074/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 25-Jul-2017 14:24:35 ALS Bottle#: 2 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-175074/2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:06:14

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.553 | 1.559 | -0.006 | 8976829 | 57.5 | | 115 | 30546 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.553 | 1.559 | -0.006 | 1.000 | 3654496 | 23.1 | 115 | 1309 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.763 | 1.778 | -0.015 | 6369306 | 57.6 | | 115 | 45128 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.763 | 1.778 | -0.015 | 1.000 | 2790368 | 21.0 | 105 | 1543 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.782 | 1.797 | -0.015 | 157457 | NC | | | 4610 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.791 | 1.806 | -0.015 | 1.000 | 4841054 | 20.6 | 117 | 2988 | |
| | 298.90 > 99.00 | 1.791 | 1.806 | -0.015 | 1.000 | 1934855 | 2.50(0.00-0.00) | | 2292 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.040 | 2.058 | -0.018 | 5932593 | 58.6 | | 117 | 31941 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.040 | 2.058 | -0.018 | 1.000 | 2441611 | 21.6 | 108 | 4720 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.371 | 2.393 | -0.022 | 5686120 | 67.8 | | 136 | 27251 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.371 | 2.393 | -0.022 | 1.000 | 2486947 | 21.3 | 107 | 5241 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.387 | 2.409 | -0.022 | 7463717 | 54.3 | | 115 | 30987 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.387 | 2.409 | -0.022 | 1.000 | 3073277 | 18.0 | 98.9 | 2426 | |
| D 14 13C4 PFOA | 417.00 > 372.00 | 2.732 | 2.756 | -0.024 | 5282286 | 64.3 | | 129 | 29704 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.732 | 2.756 | -0.024 | 1.000 | 2334880 | 20.7 | | 104 | 552 | |
| 413.00 > 169.00 | 2.732 | 2.756 | -0.024 | 1.000 | 1322738 | | 1.77(0.90-1.10) | | 9118 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.739 | 2.763 | -0.024 | 1.000 | 2924882 | 22.8 | | 120 | 22669 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.108 | 3.131 | -0.023 | 1.000 | 2476913 | 20.5 | | 110 | 8966 | |
| 499.00 > 99.00 | 3.108 | 3.131 | -0.023 | 1.000 | 557091 | | 4.45(0.90-1.10) | | 3850 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.108 | 3.131 | -0.023 | | 3682740 | 56.0 | | 112 | 18714 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.108 | 3.131 | -0.023 | | 5470295 | 50.6 | | 106 | 18665 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.108 | 3.140 | -0.032 | 1.000 | 1576377 | 21.0 | | 105 | 4058 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.465 | 3.487 | -0.022 | | 7317412 | 40.0 | | 80.1 | 11787 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.465 | 3.497 | -0.032 | | 3440640 | 61.6 | | 123 | 13105 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.465 | 3.497 | -0.032 | 1.000 | 2953986 | 22.4 | | 112 | 12070 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.465 | 3.497 | -0.032 | 1.000 | 1504043 | 22.3 | | 112 | 6620 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.781 | 3.803 | -0.022 | 1.000 | 1465104 | 20.6 | | 107 | 10690 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.800 | 3.822 | -0.022 | 1.000 | 1118308 | 21.5 | | 107 | 1998 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.800 | 3.822 | -0.022 | | 2526116 | 62.0 | | 124 | 8490 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.097 | 4.116 | -0.019 | 1.000 | 1006207 | 23.1 | | 116 | 2865 | |
| D 36 13C2 PFDaA | | | | | | | | | | |
| 615.00 > 570.00 | 4.097 | 4.116 | -0.019 | | 2343032 | 52.5 | | 105 | 4250 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.360 | 4.380 | -0.020 | 1.000 | 942983 | 23.6 | | 118 | 359 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | |
| 712.50 > 668.90 | 4.604 | 4.614 | -0.010 | 1.000 | 2638055 | 29.3 | | 146 | 193 | |
| 713.00 > 169.00 | 4.594 | 4.614 | -0.020 | 0.998 | 319691 | | 8.25(0.00-0.00) | | 4656 | |
| D 43 13C2-PFTeDA | | | | | | | | | | |
| 715.00 > 670.00 | 4.604 | 4.614 | -0.010 | | 5981129 | 73.6 | | 147 | 32916 | |
| 45 Perfluorohexadecanoic acid | | | | | | | | | | |
| 813.00 > 769.00 | 5.010 | 5.025 | -0.015 | 1.000 | 887991 | 23.3 | | 116 | 146 | |
| D 44 13C2-PFHxDA | | | | | | | | | | |
| 815.00 > 770.00 | 5.010 | 5.025 | -0.015 | | 2255337 | 54.6 | | 109 | 2999 | |
| 46 Perfluorooctadecanoic acid | | | | | | | | | | |
| 913.00 > 869.00 | 5.368 | 5.383 | -0.015 | 1.000 | 802336 | 22.4 | | 112 | 318 | |

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_003.d

Injection Date: 25-Jul-2017 14:24:35

Instrument ID: A8_N

Lims ID: LCS 320-175074/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

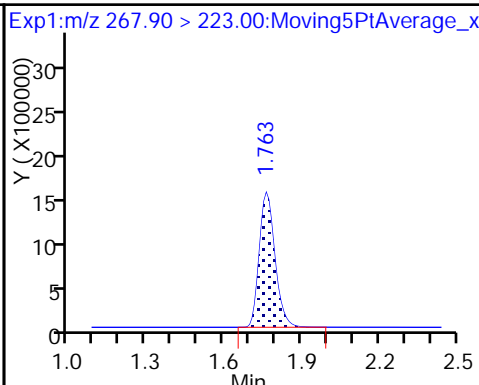
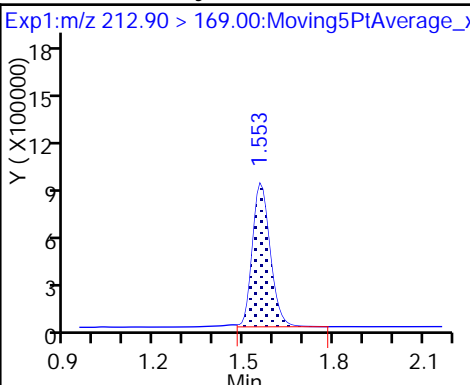
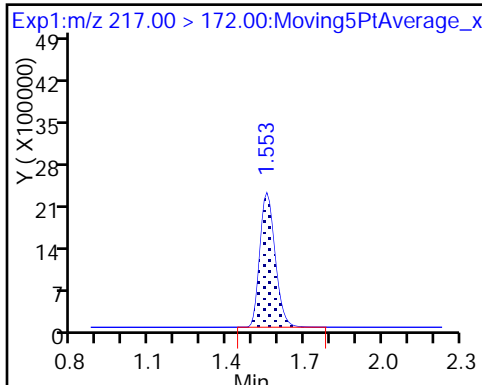
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

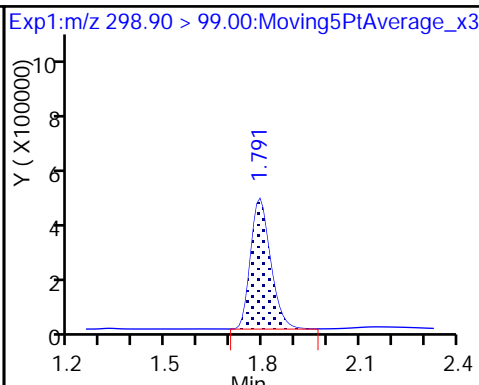
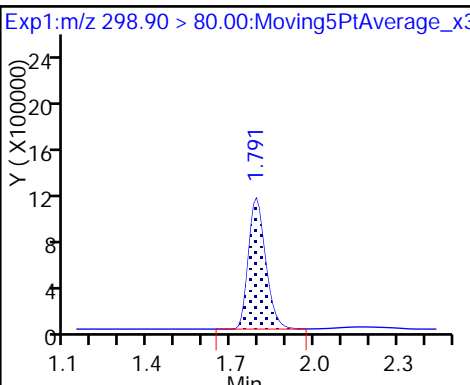
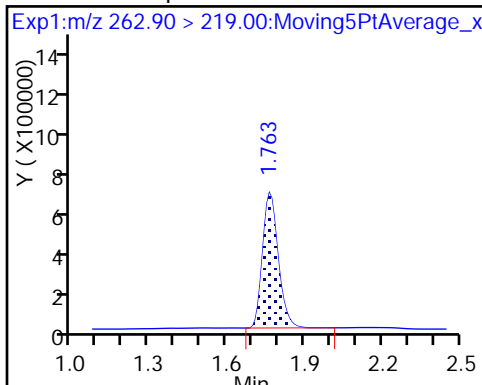
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

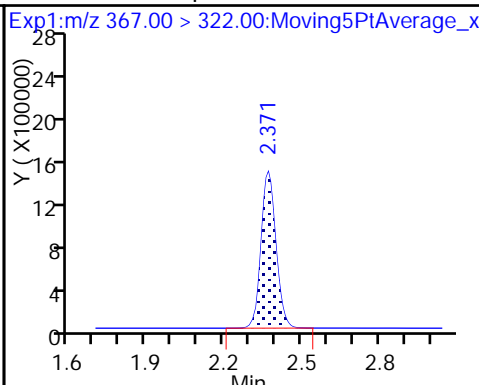
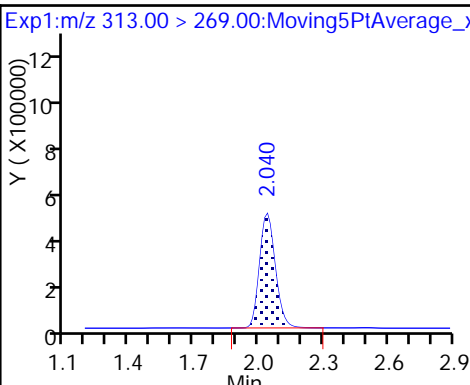
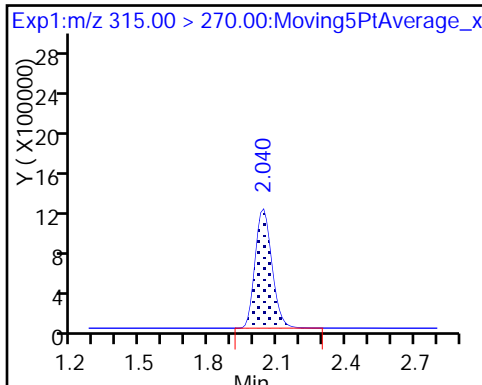
5 Perfluorobutanesulfonic acid



D 7 13C2 PFHxA

6 Perfluorohexanoic acid

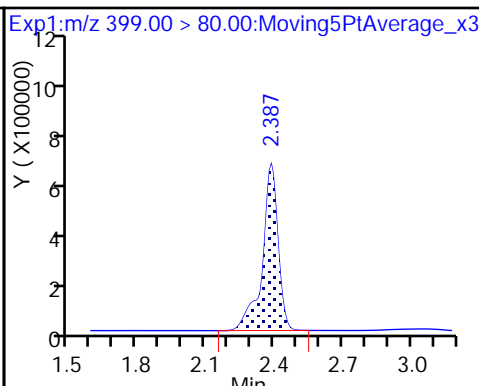
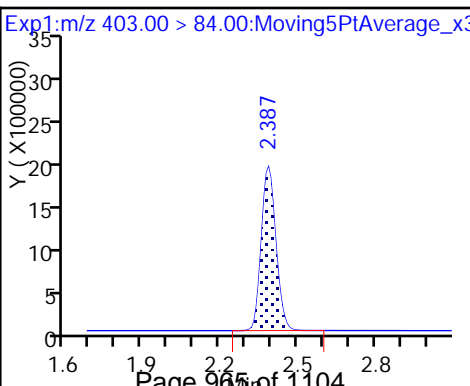
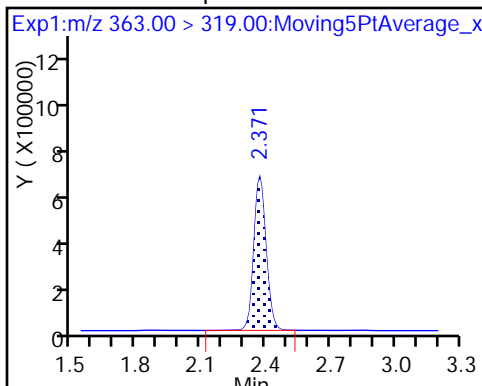
D 9 13C4-PFHpA



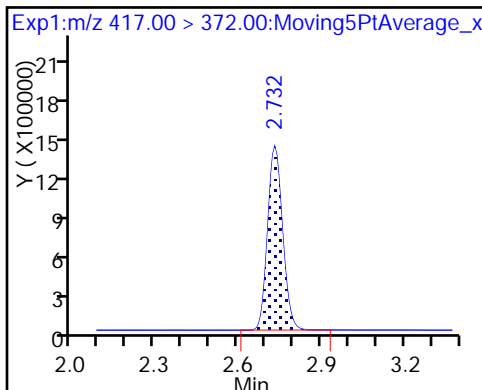
10 Perfluoroheptanoic acid

D 11 18O2 PFHxS

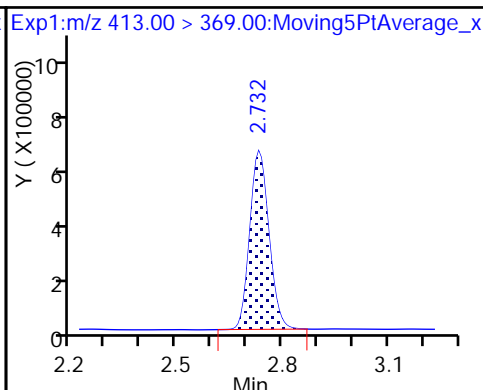
8 Perfluorohexanesulfonic acid



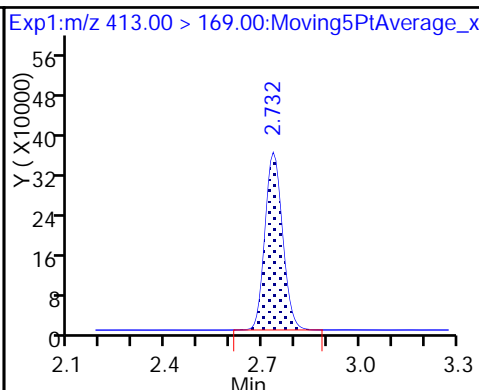
D 14 13C4 PFOA



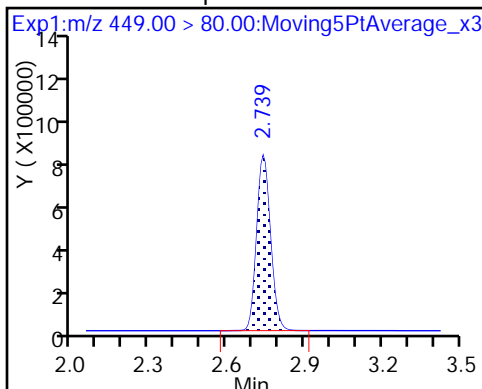
15 Perfluorooctanoic acid



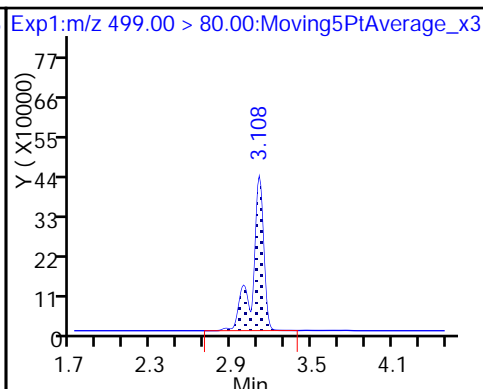
15 Perfluorooctanoic acid



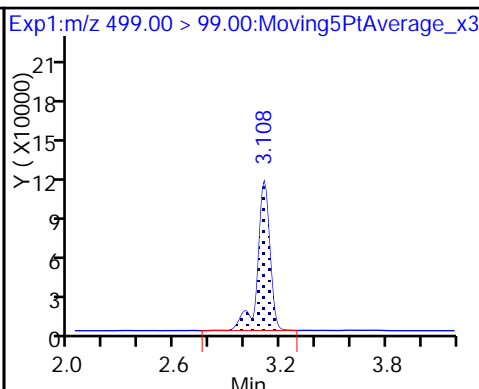
16 Perfluoroheptanesulfonic Acid



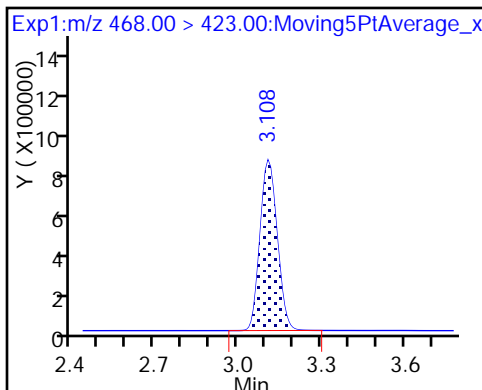
17 Perfluorooctane sulfonic acid



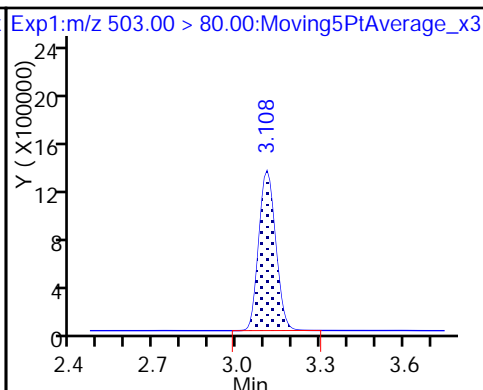
17 Perfluorooctane sulfonic acid



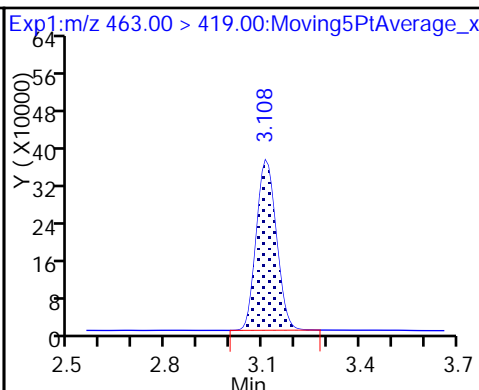
D 19 13C5 PFNA



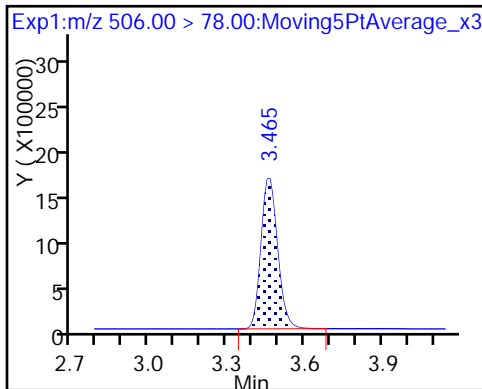
D 18 13C4 PFOS



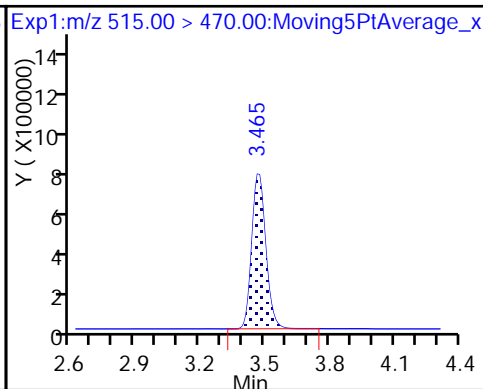
20 Perfluorononanoic acid



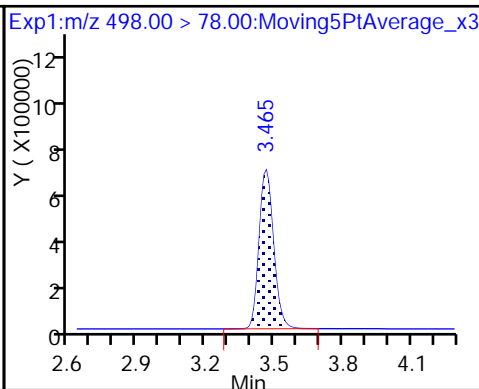
D 21 13C8 FOSA

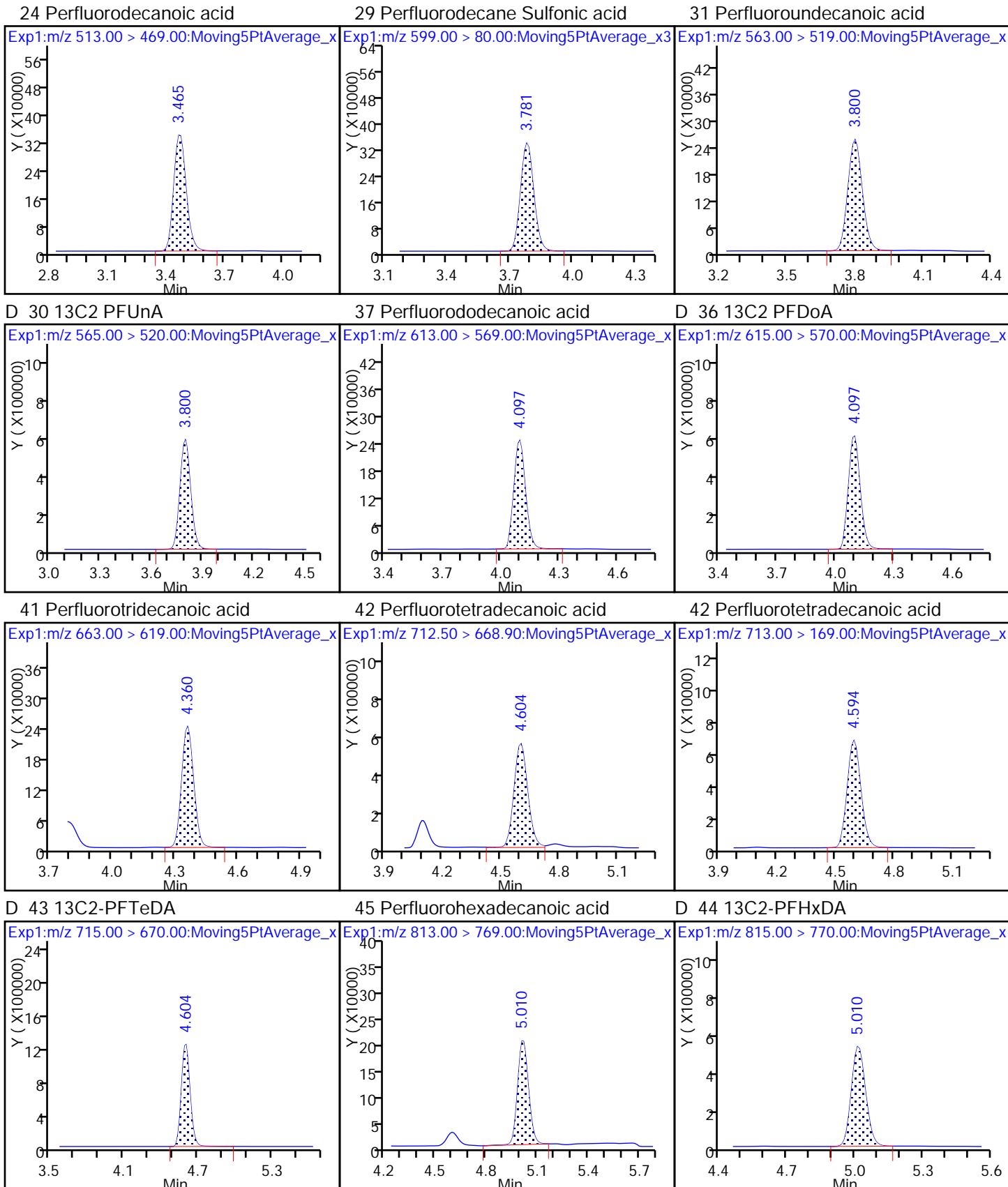


D 23 13C2 PFDA

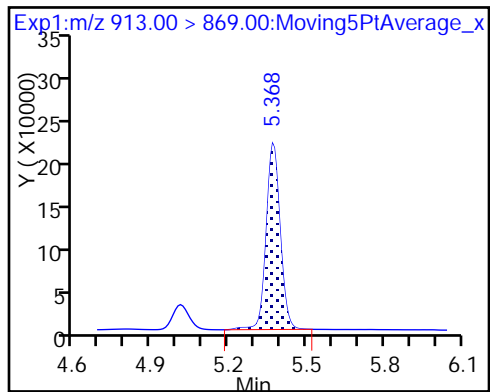


22 Perfluorooctane Sulfonamide





46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-175097/2-A
 Matrix: Water Lab File ID: 2017.07.23A_003.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250 (mL) Date Analyzed: 07/23/2017 14:46
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|---|-----|-----|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 43.9 | | 2.5 | 1.0 | 0.46 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 40.4 | | 2.5 | 2.0 | 0.99 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 41.9 | | 2.5 | 2.0 | 0.79 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 42.1 | | 2.5 | 2.0 | 0.80 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 39.8 | | 2.5 | 2.0 | 0.75 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 42.2 | | 2.5 | 2.0 | 0.65 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 42.6 | | 2.5 | 1.0 | 0.44 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 41.4 | | 2.5 | 2.0 | 0.75 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 46.3 | | 2.5 | 2.0 | 0.58 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 54.0 | | 2.5 | 2.0 | 0.55 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 39.2 | | 2.5 | 2.0 | 0.92 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 35.8 | | 2.5 | 2.0 | 0.87 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 44.5 | | 2.5 | 2.0 | 0.71 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 38.2 | | 4.0 | 3.0 | 1.3 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 42.5 | | 4.0 | 3.0 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 43.1 | | 40 | 2.0 | 0.64 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-175097/2-A
 Matrix: Water Lab File ID: 2017.07.23A_003.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250 (mL) Date Analyzed: 07/23/2017 14:46
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 7 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 101 | | 25-150 |
| STL00993 | 13C2 PFHxA | 100 | | 25-150 |
| STL00990 | 13C4 PFOA | 113 | | 25-150 |
| STL00995 | 13C5 PFNA | 98 | | 25-150 |
| STL00996 | 13C2 PFDA | 120 | | 25-150 |
| STL00997 | 13C2 PFUnA | 104 | | 25-150 |
| STL00998 | 13C2 PFDoA | 86 | | 25-150 |
| STL00994 | 18O2 PFHxS | 101 | | 25-150 |
| STL00991 | 13C4 PFOS | 94 | | 25-150 |
| STL01892 | 13C4-PFHpA | 119 | | 25-150 |
| STL01893 | 13C5 PFPeA | 102 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_003.d
 Lims ID: LCS 320-175097/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 23-Jul-2017 14:46:44 ALS Bottle#: 2 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-175097/2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 12:07:17 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 11:57:54

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| 2 Perfluorobutyric acid | 212.90 | > 169.00 | 1.563 | 1.556 | 0.007 | 1.000 | 3052002 | 21.9 | 110 | 1464 |
| D 1 13C4 PFBA | 217.00 | > 172.00 | 1.563 | 1.556 | 0.007 | | 7886879 | 50.5 | 101 | 36177 |
| 4 Perfluoropentanoic acid | 262.90 | > 219.00 | 1.782 | 1.775 | 0.007 | 1.000 | 2381527 | 20.2 | 101 | 1456 |
| D 3 13C5-PFPeA | 267.90 | > 223.00 | 1.782 | 1.775 | 0.007 | | 5656527 | 51.2 | 102 | 78977 |
| D 47 13C3-PFBS | 301.90 | > 83.00 | 1.800 | 1.793 | 0.007 | | 131297 | NC | | 3375 |
| 5 Perfluorobutanesulfonic acid | 298.90 | > 80.00 | 1.809 | 1.802 | 0.007 | 1.000 | 4062981 | 19.6 | 111 | 2533 |
| | 298.90 | > 99.00 | 1.809 | 1.802 | 0.007 | 1.000 | 1590370 | 2.55(0.00-0.00) | | 1665 |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 | > 307.00 | 2.017 | 2.020 | -0.003 | 1.000 | 1168411 | 21.0 | 112 | 38920 |
| 6 Perfluorohexanoic acid | 313.00 | > 269.00 | 2.062 | 2.055 | 0.007 | 1.000 | 2020818 | 20.9 | 105 | 5407 |
| D 7 13C2 PFHxA | 315.00 | > 270.00 | 2.062 | 2.055 | 0.007 | | 5066182 | 50.1 | 100 | 38886 |
| 10 Perfluoroheptanoic acid | 363.00 | > 319.00 | 2.409 | 2.403 | 0.006 | 1.000 | 2161863 | 21.1 | 105 | 6586 |
| D 9 13C4-PFHpA | 367.00 | > 322.00 | 2.409 | 2.403 | 0.006 | | 4998603 | 59.6 | 119 | 36601 |
| 8 Perfluorohexanesulfonic acid | 399.00 | > 80.00 | 2.425 | 2.419 | 0.006 | 1.000 | 2690402 | 17.9 | 98.2 | 2328 |
| D 11 18O2 PFHxS | 403.00 | > 84.00 | 2.425 | 2.419 | 0.006 | | 6579646 | 47.9 | 101 | 37270 |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.751 | 2.742 | 0.009 | 1.000 | 1144558 | 22.3 | 118 | 18226 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 12 M2-6:2FTS | | | | | | | | | | |
| 429.00 > 409.00 | 2.751 | 2.742 | 0.009 | | 2719354 | 57.2 | | 120 | 31525 | |
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.780 | 2.771 | 0.009 | 1.000 | 1965342 | 19.9 | | 99.5 | 570 | |
| 413.00 > 169.00 | 2.773 | 2.771 | 0.002 | 0.997 | 1225010 | | 1.60(0.90-1.10) | | 7589 | |
| D 14 13C4 PFOA | | | | | | | | | | |
| 417.00 > 372.00 | 2.773 | 2.771 | 0.002 | | 4626917 | 56.3 | | 113 | 33530 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.780 | 2.778 | 0.002 | 1.000 | 2543218 | 22.3 | | 117 | 25625 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.156 | 3.151 | 0.005 | 1.000 | 2055468 | 19.1 | | 103 | 7662 | |
| 499.00 > 99.00 | 3.156 | 3.151 | 0.005 | 1.000 | 434769 | | 4.73(0.90-1.10) | | 2846 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.156 | 3.151 | 0.005 | 1.000 | 1377313 | 21.1 | | 105 | 4760 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.156 | 3.151 | 0.005 | | 4866132 | 45.0 | | 94.1 | 21756 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.156 | 3.151 | 0.005 | | 3207606 | 48.8 | | 97.6 | 15958 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | | | | | | | | | | |
| 527.00 > 507.00 | 3.507 | 3.497 | 0.010 | 1.000 | 1132944 | 22.9 | | 120 | 19226 | |
| D 26 M2-8:2FTS | | | | | | | | | | |
| 529.00 > 509.00 | 3.507 | 3.497 | 0.010 | | 2601645 | 71.3 | | 149 | 13122 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.507 | 3.507 | 0.0 | | 626734 | 3.43 | | 6.9 | 5644 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.507 | 3.507 | 0.0 | 1.000 | 243545 | 21.5 | | 108 | 3231 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.516 | 3.507 | 0.009 | | 3347726 | 60.0 | | 120 | 9217 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.516 | 3.507 | 0.009 | 1.000 | 1398708 | 21.3 | | 107 | 5888 | |
| D 27 d3-NMeFOSAA | | | | | | | | | | |
| 573.00 > 419.00 | 3.673 | 3.658 | 0.015 | | 958470 | 44.1 | | 88.2 | 7687 | |
| 28 N-methyl perfluorooctane sulfonami | | | | | | | | | | |
| 570.00 > 419.00 | 3.673 | 3.669 | 0.004 | 1.000 | 443563 | 25.4 | | 127 | 7246 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.826 | 3.815 | 0.011 | 1.000 | 1346581 | 21.2 | | 110 | 10257 | |
| D 32 d5-NEtFOSAA | | | | | | | | | | |
| 589.00 > 419.00 | 3.835 | 3.824 | 0.011 | | 958018 | 43.7 | | 87.4 | 3202 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.844 | 3.833 | 0.011 | 1.000 | 904793 | 20.7 | | 104 | 2314 | |
| 33 N-ethyl perfluorooctane sulfonamid | | | | | | | | | | |
| 584.00 > 419.00 | 3.844 | 3.833 | 0.011 | 1.002 | 395682 | 24.3 | | 122 | 5075 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.844 | 3.833 | 0.011 | | 2119222 | 52.0 | | 104 | 9826 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.139 | 4.123 | 0.016 | 1.000 | 823868 | 23.1 | | 116 | 736 | |
| D 36 13C2 PFDoA | | | | | | | | | | |
| 615.00 > 570.00 | 4.139 | 4.123 | 0.016 | | 1916326 | 42.9 | | 85.8 | 8956 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.398 | 4.388 | 0.010 | 1.000 | 880910 | 27.0 | 135 | 358 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.641 | 4.619 | 0.023 | | 6449013 | 79.4 | 159 | 33341 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.641 | 4.630 | 0.011 | 1.000 | 2709266 | 36.8 | 184 | 254 | |
| | 713.00 > 169.00 | 4.630 | 4.630 | 0.0 | 0.998 | 367142 | 7.38(0.00-0.00) | | 6041 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.044 | 5.030 | 0.014 | 1.000 | 719045 | 23.0 | 115 | 179 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.044 | 5.030 | 0.014 | | 1960192 | 47.5 | 94.9 | 4489 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.394 | 5.381 | 0.013 | 1.000 | 665292 | 22.7 | 113 | 325 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_003.d

Injection Date: 23-Jul-2017 14:46:44

Instrument ID: A8_N

Lims ID: LCS 320-175097/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

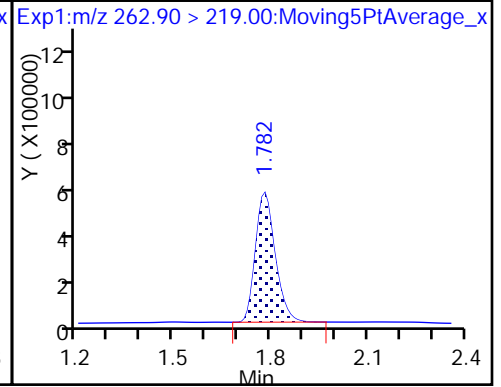
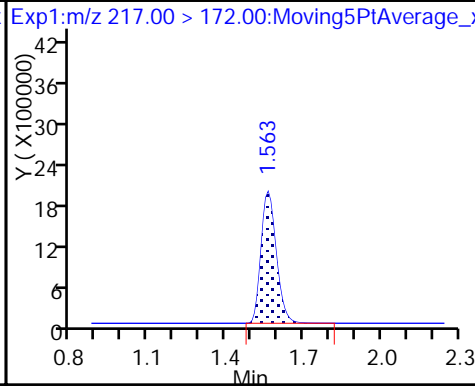
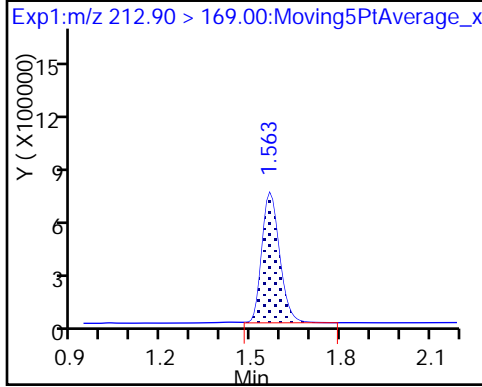
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

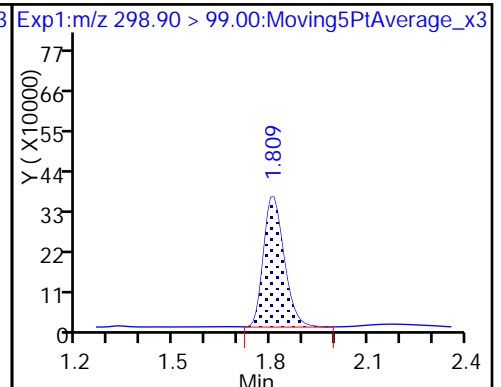
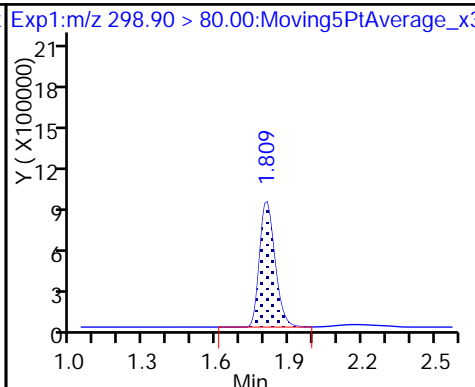
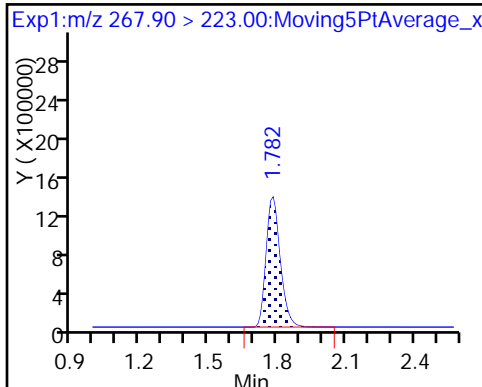
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

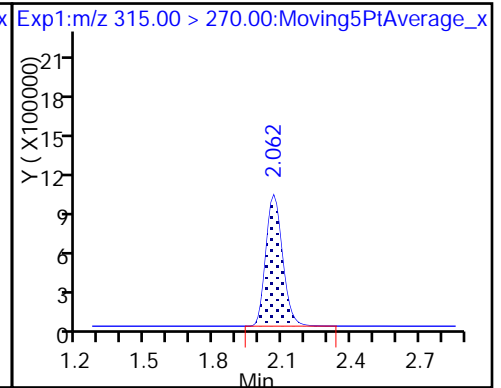
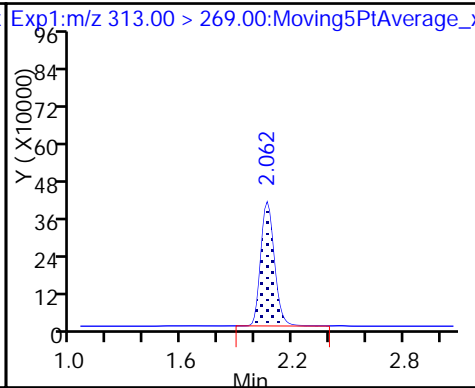
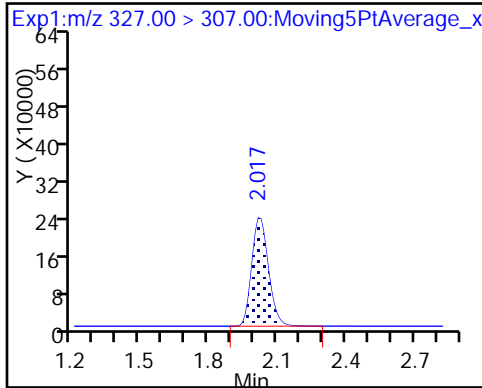
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

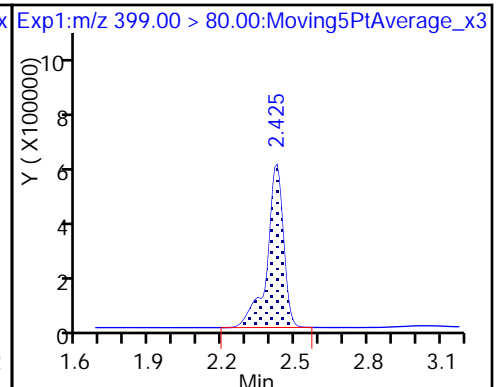
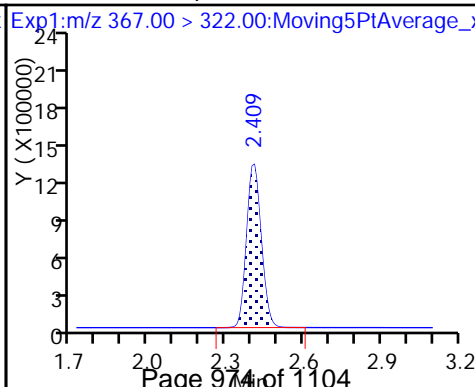
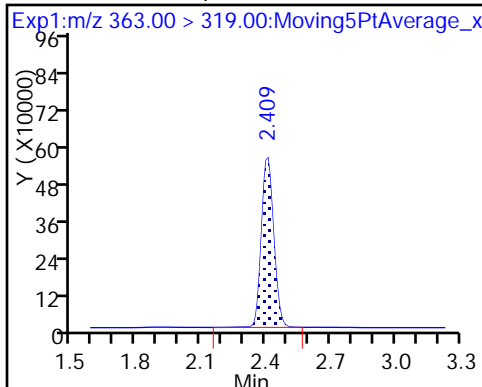
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

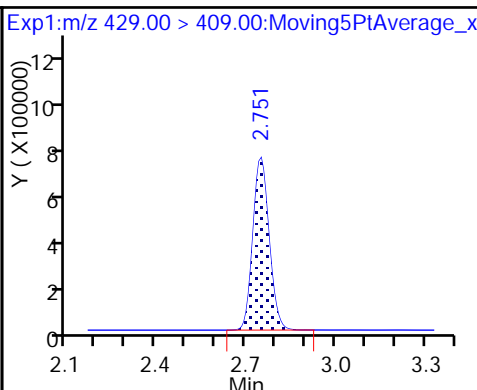
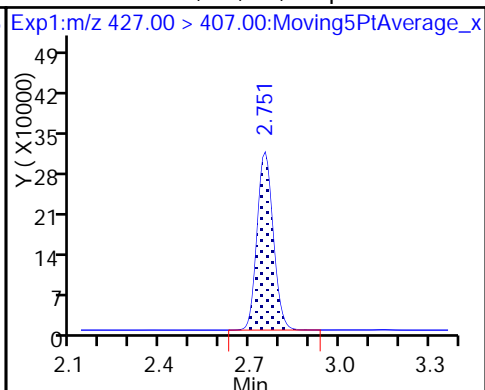
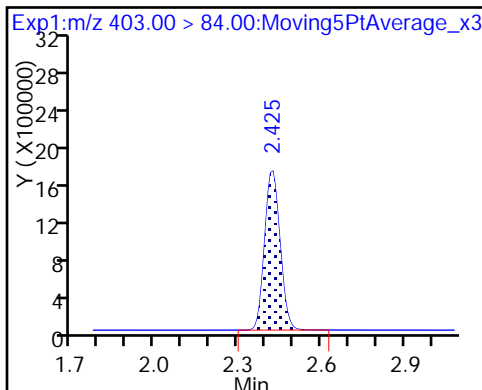
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecane

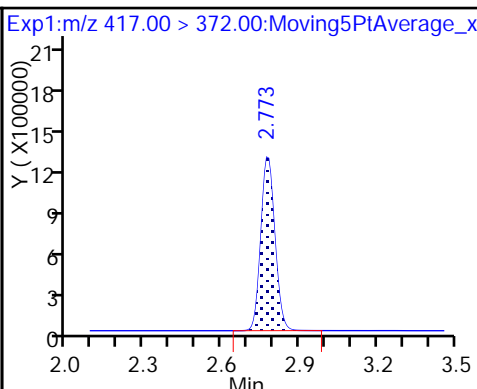
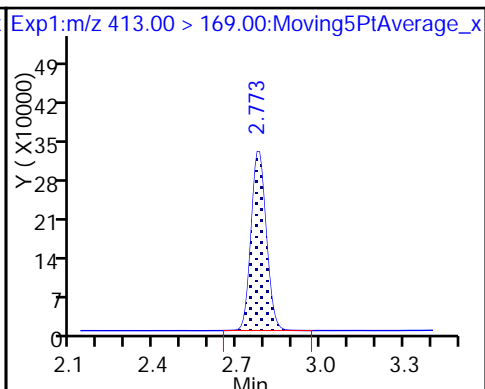
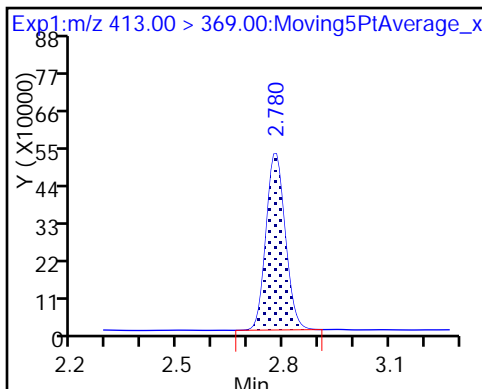
D 12 M2-6:2FTS



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

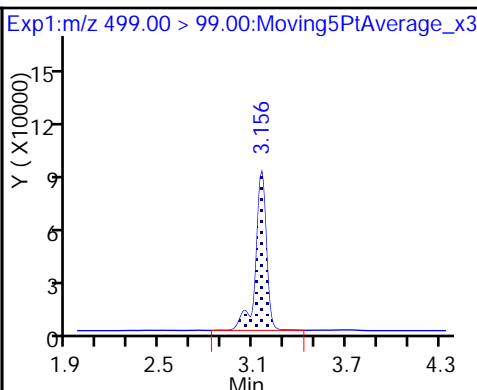
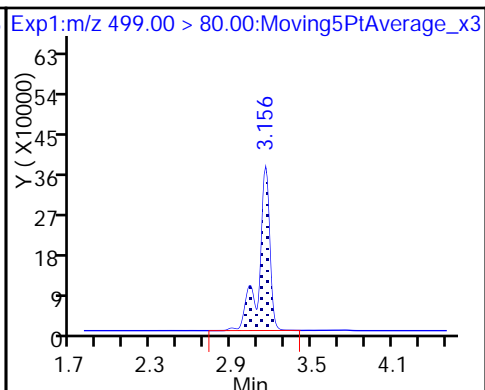
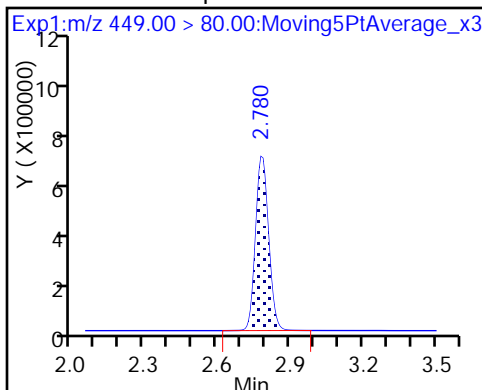
D 14 13C4 PFOA



16 Perfluoroheptanesulfonic Acid

17 Perfluorooctane sulfonic acid

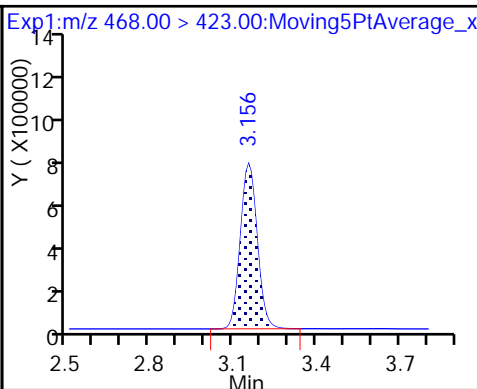
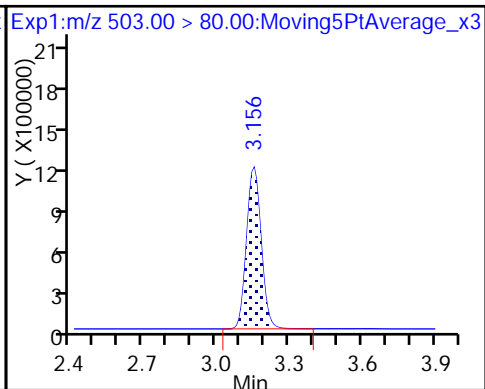
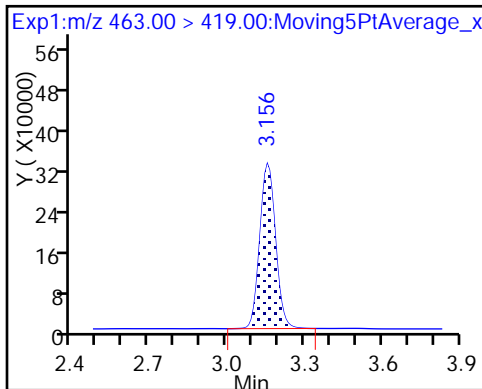
17 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid

D 18 13C4 PFOS

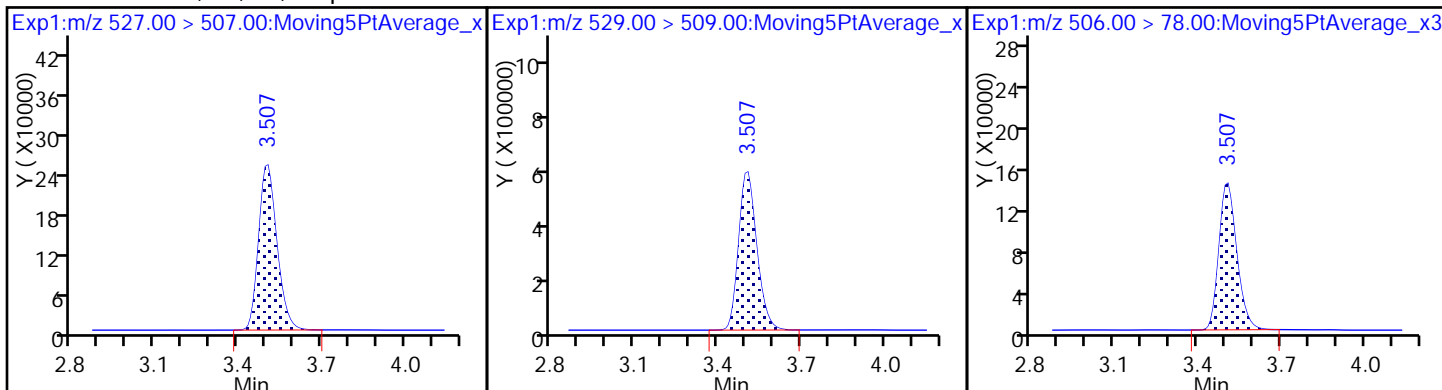
D 19 13C5 PFNA



25 Sodium 1H,1H,2H,2H-perfluorodecanoate

D26 M2-8:2FTS

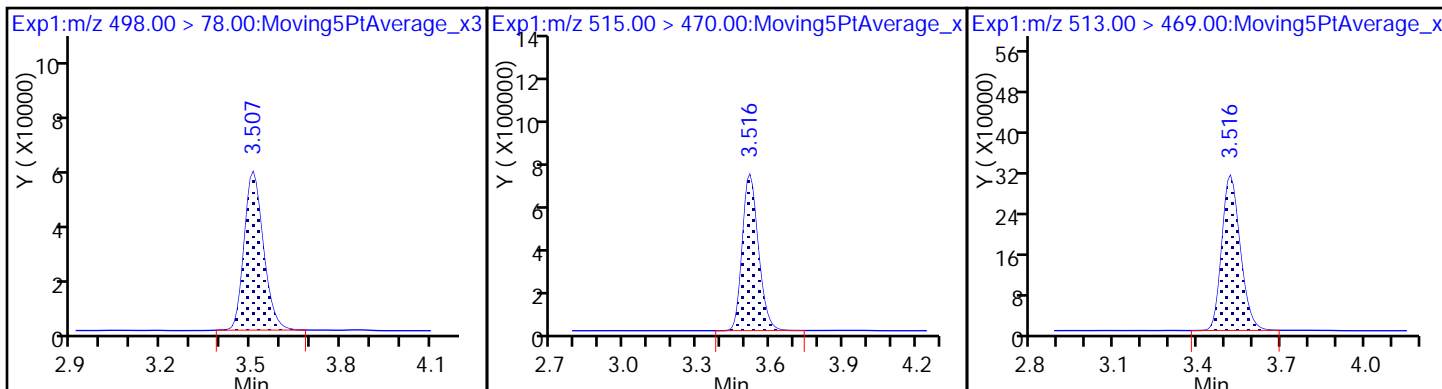
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 23 13C2 PFDA

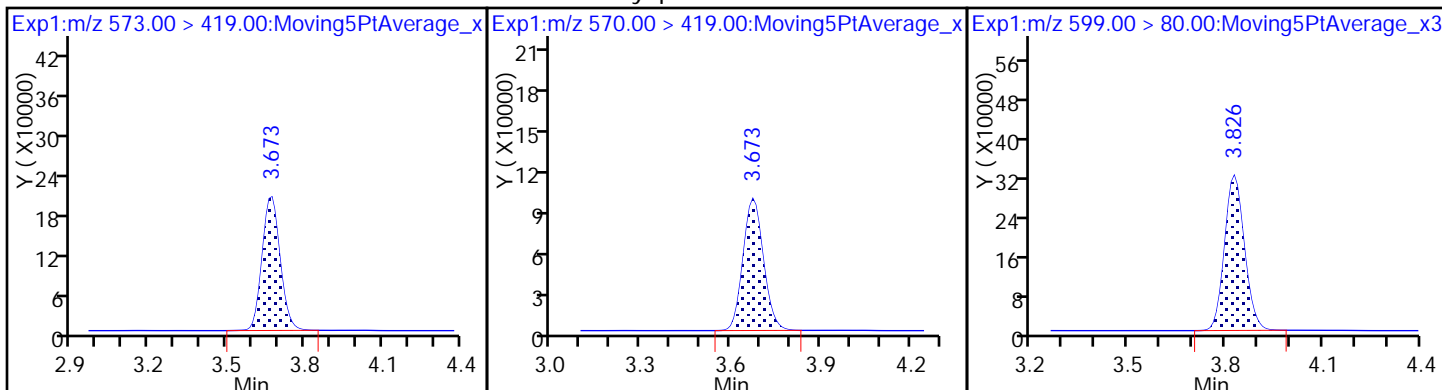
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

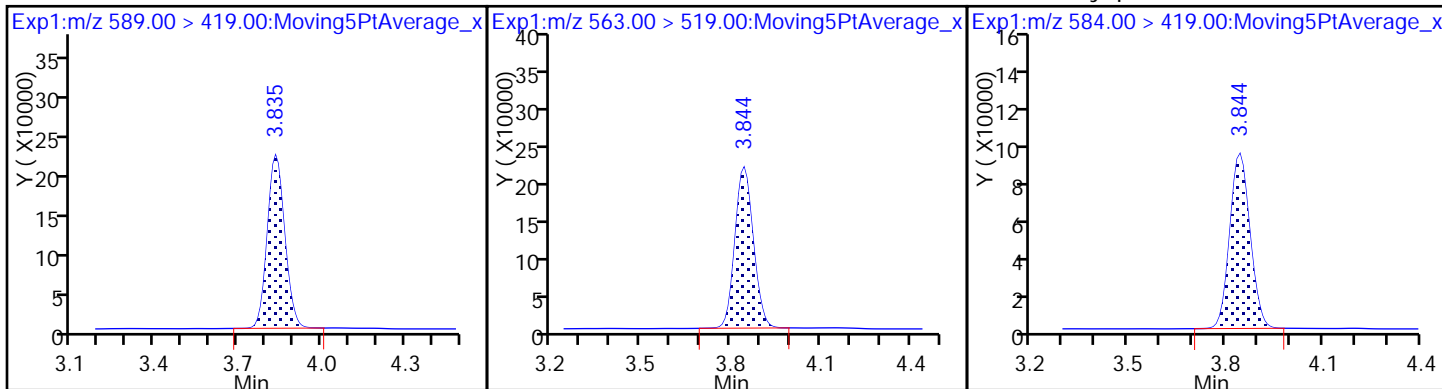
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid

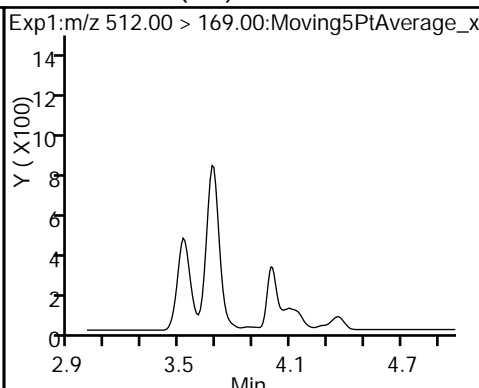
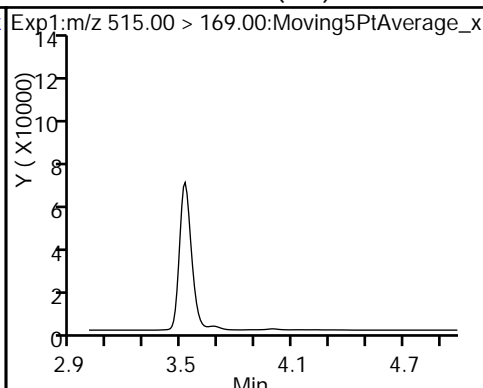
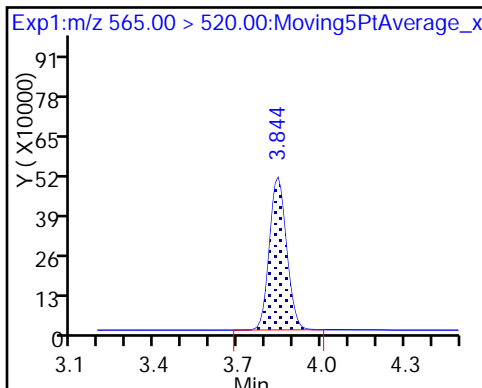
33 N-ethyl perfluorooctane sulfonamid



D 30 13C2 PFUnA

D 34 d-N-MeFOSA-M (ND)

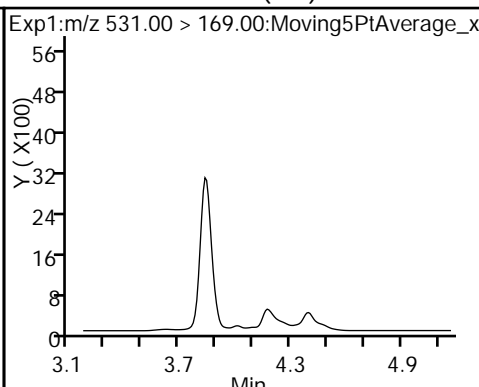
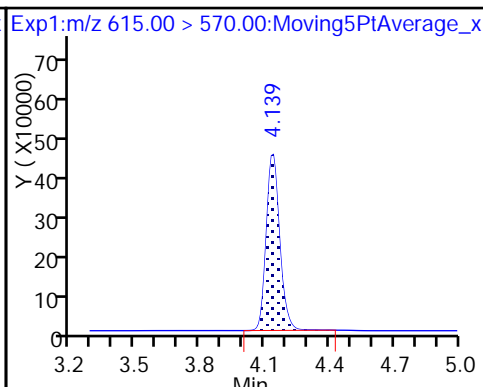
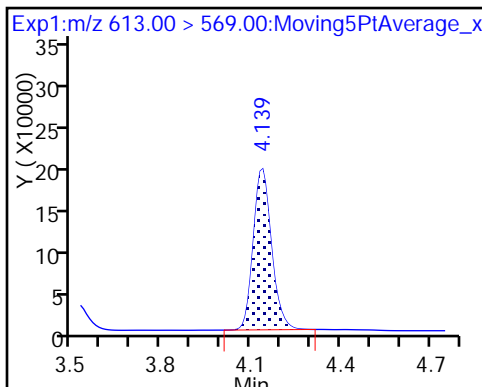
35 MeFOSA (ND)



37 Perfluorododecanoic acid

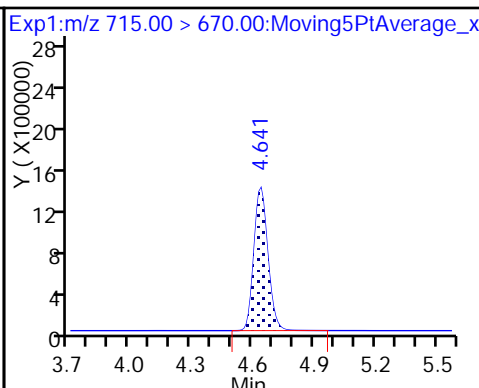
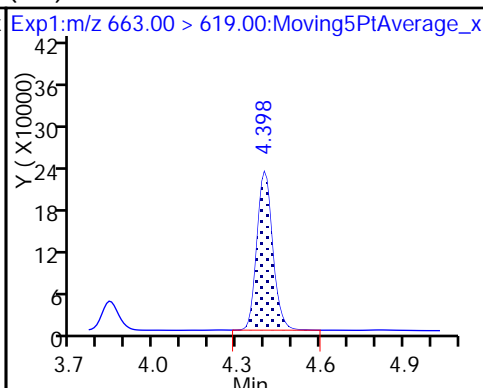
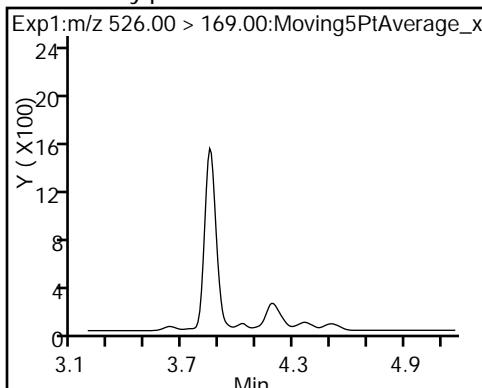
D 36 13C2 PFDaA

D 38 d-N-EtFOSA-M (ND)



39 N-ethylperfluoro-1-octanesulfonami (ND) Perfluorotridecanoic acid

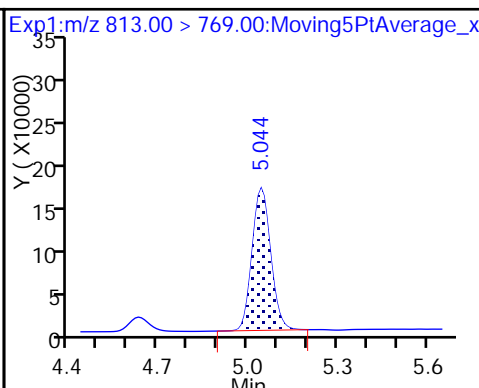
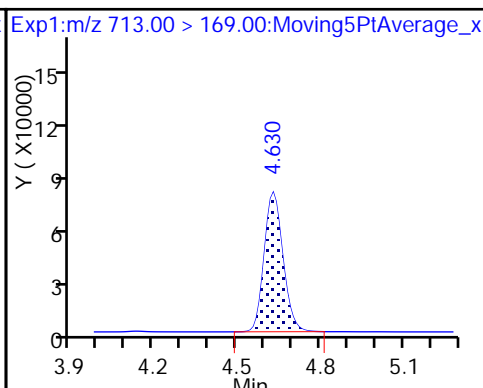
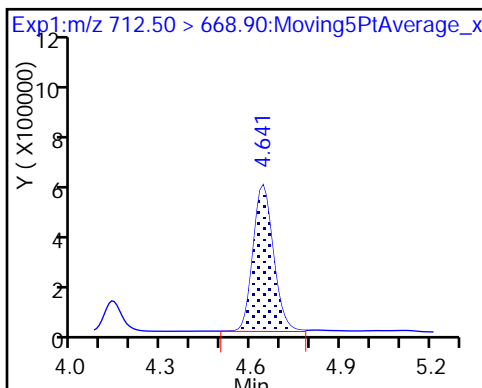
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

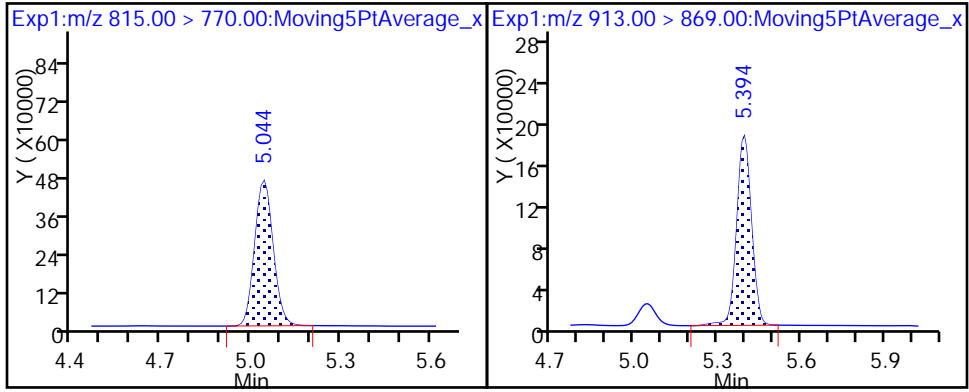
42 Perfluorotetradecanoic acid

45 Perfluorohexadecanoic acid



D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-175742/2-A
 Matrix: Water Lab File ID: 2017.07.27C_003.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/25/2017 09:12
 Sample wt/vol: 250.00 (mL) Date Analyzed: 07/27/2017 21:02
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 176487 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|------------------------------------|--------|---|-----|-----|------|
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 44.4 | | 40 | 2.0 | 0.64 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 62 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_003.d
 Lims ID: LCS 320-175742/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 27-Jul-2017 21:02:40 ALS Bottle#: 26 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-175742/2-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 28-Jul-2017 14:14:10 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: barnettj Date: 28-Jul-2017 13:44:18

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| 2 Perfluorobutyric acid | 212.90 | > 169.00 | 1.572 | 1.565 | 0.007 | 1.000 | 2807826 | 22.3 | 112 | 863 |
| D 1 13C4 PFBA | 217.00 | > 172.00 | 1.572 | 1.565 | 0.007 | | 7129799 | 45.7 | 91.4 | 16082 |
| 4 Perfluoropentanoic acid | 262.90 | > 219.00 | 1.791 | 1.784 | 0.007 | 1.000 | 2105669 | 19.0 | 95.0 | 872 |
| D 3 13C5-PFPeA | 267.90 | > 223.00 | 1.791 | 1.784 | 0.007 | | 5320015 | 48.1 | 96.3 | 29712 |
| D 47 13C3-PFBS | 301.90 | > 83.00 | 1.819 | 1.802 | 0.017 | | 119917 | NC | | 4427 |
| 5 Perfluorobutanesulfonic acid | 298.90 | > 80.00 | 1.819 | 1.812 | 0.007 | 1.000 | 3482931 | 17.4 | 98.6 | 2367 |
| | 298.90 | > 99.00 | 1.819 | 1.812 | 0.007 | 1.000 | 1361616 | 2.56(0.00-0.00) | | 1763 |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 | > 307.00 | 2.028 | 2.020 | 0.008 | 1.000 | 986293 | 18.3 | 97.9 | 24654 |
| 6 Perfluorohexanoic acid | 313.00 | > 269.00 | 2.074 | 2.054 | 0.020 | 1.000 | 1934353 | 20.2 | 101 | 3965 |
| D 7 13C2 PFHxA | 315.00 | > 270.00 | 2.062 | 2.054 | 0.008 | | 5033458 | 49.8 | 99.5 | 18979 |
| 10 Perfluoroheptanoic acid | 363.00 | > 319.00 | 2.399 | 2.385 | 0.014 | 1.000 | 2104000 | 20.5 | 103 | 2522 |
| D 9 13C4-PFHpA | 367.00 | > 322.00 | 2.399 | 2.385 | 0.014 | | 4992743 | 59.6 | 119 | 15198 |
| 8 Perfluorohexanesulfonic acid | 399.00 | > 80.00 | 2.415 | 2.401 | 0.014 | 1.000 | 2469765 | 17.0 | 93.5 | 2276 |
| D 11 18O2 PFHxS | 403.00 | > 84.00 | 2.415 | 2.401 | 0.014 | | 6347025 | 46.2 | 97.6 | 18352 |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.734 | 2.711 | 0.023 | 1.000 | 1051906 | 21.1 | 112 | 12166 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 12 M2-6:2FTS | | | | | | | | | | |
| 429.00 > 409.00 | 2.734 | 2.711 | 0.023 | | 2637690 | 55.5 | | 117 | 17351 | |
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.763 | 2.740 | 0.023 | 1.000 | 1961592 | 19.7 | | 98.7 | 433 | |
| 413.00 > 169.00 | 2.763 | 2.740 | 0.023 | 1.000 | 1080871 | | 1.81(0.90-1.10) | | 5213 | |
| D 14 13C4 PFOA | | | | | | | | | | |
| 417.00 > 372.00 | 2.763 | 2.740 | 0.023 | | 4656196 | 56.7 | | 113 | 17233 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.770 | 2.747 | 0.023 | 1.000 | 2284310 | 21.6 | | 113 | 14819 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.139 | 3.111 | 0.028 | 1.000 | 1342791 | 19.2 | | 96.1 | 2611 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.139 | 3.111 | 0.028 | 1.000 | 1857828 | 18.6 | | 100 | 11682 | |
| 499.00 > 99.00 | 3.139 | 3.111 | 0.028 | 1.000 | 388281 | | 4.78(0.90-1.10) | | 2579 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.139 | 3.111 | 0.028 | | 3431991 | 52.2 | | 104 | 12277 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.139 | 3.111 | 0.028 | | 4514128 | 41.7 | | 87.3 | 13075 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.475 | 3.454 | 0.021 | 1.000 | 2268822 | 22.2 | | 111 | 9828 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | | | | | | | | | | |
| 527.00 > 507.00 | 3.484 | 3.454 | 0.030 | 1.000 | 868022 | 21.1 | | 110 | 11503 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.475 | 3.454 | 0.021 | | 5670182 | 31.0 | | 62.0 | 9300 | |
| D 26 M2-8:2FTS | | | | | | | | | | |
| 529.00 > 509.00 | 3.484 | 3.454 | 0.030 | | 2160319 | 59.2 | | 124 | 14698 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.493 | 3.474 | 0.019 | 1.000 | 1311597 | 20.0 | | 99.8 | 5492 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.493 | 3.474 | 0.019 | | 3354597 | 60.1 | | 120 | 7120 | |
| 28 N-methyl perfluorooctane sulfonami | | | | | | | | | | |
| 570.00 > 419.00 | 3.647 | 3.631 | 0.016 | 1.000 | 348896 | 22.7 | | 113 | 5169 | |
| D 27 d3-NMeFOSAA | | | | | | | | | | |
| 573.00 > 419.00 | 3.647 | 3.631 | 0.016 | | 844688 | 38.9 | | 77.7 | 5133 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.803 | 3.777 | 0.026 | 1.000 | 1130986 | 19.2 | | 99.8 | 7601 | |
| D 32 d5-NEtFOSAA | | | | | | | | | | |
| 589.00 > 419.00 | 3.812 | 3.787 | 0.025 | | 972487 | 44.3 | | 88.7 | 2240 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.821 | 3.797 | 0.024 | 1.000 | 918038 | 21.4 | | 107 | 1441 | |
| 33 N-ethyl perfluorooctane sulfonamid | | | | | | | | | | |
| 584.00 > 419.00 | 3.821 | 3.797 | 0.024 | 1.002 | 358341 | 21.7 | | 109 | 3550 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.821 | 3.797 | 0.024 | | 2078788 | 51.0 | | 102 | 8951 | |
| 35 MeFOSA | | | | | | | | | | |
| 512.00 > 169.00 | 3.971 | 3.956 | 0.015 | 1.000 | 6613 | 32.3 | | 161 | 81.7 | |
| D 34 d-N-MeFOSA-M | | | | | | | | | | |
| 515.00 > 169.00 | 3.971 | 3.956 | 0.015 | | 11154 | 0.2367 | | 0.5 | 4.0 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|-----------|-----------|-----------|----------|-----------------|-----------------|------|-------|-------|
| D 36 13C2 PFDaA | 615.00 > 570.00 | 4.112 | 4.088 | 0.024 | | 1986311 | 44.5 | 89.0 | 3476 | |
| 37 Perfluorododecanoic acid | 613.00 > 569.00 | 4.112 | 4.096 | 0.016 | 1.000 | 755448 | 20.5 | 102 | 1067 | |
| 39 N-ethylperfluoro-1-octanesulfonami | 526.00 > 169.00 | 4.171 | 4.147 | 0.024 | 1.000 | 2394 | 18.3 | 91.3 | 25.7 | |
| D 38 d-N-EtFOSA-M | 531.00 > 169.00 | 4.163 | 4.147 | 0.016 | | 7071 | 0.1448 | 0.3 | 32.4 | |
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.380 | 4.358 | 0.022 | 1.000 | 753868 | 22.3 | 111 | 211 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.619 | 4.593 | 0.026 | 1.000 | 2114783 | 27.7 | 138 | 162 | |
| | 713.00 > 169.00 | 4.609 | 4.593 | 0.016 | 0.998 | 290171 | 7.29(0.00-0.00) | | 3196 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.619 | 4.593 | 0.026 | | 5333296 | 65.7 | 131 | 11676 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.024 | 5.005 | 0.019 | | 2006413 | 48.6 | 97.1 | 3249 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.033 | 5.015 | 0.018 | 1.000 | 712900 | 22.0 | 110 | 138 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.381 | 5.365 | 0.016 | 1.000 | 696541 | 22.9 | 115 | 230 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_003.d

Injection Date: 27-Jul-2017 21:02:40

Instrument ID: A8_N

Lims ID: LCS 320-175742/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 26

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

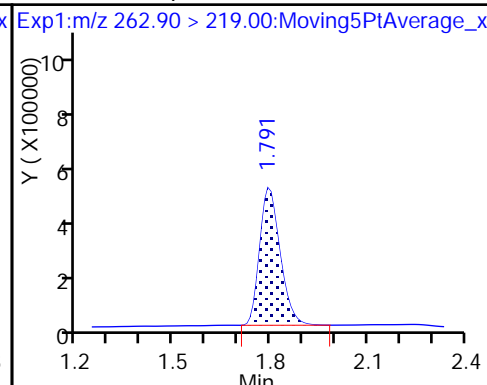
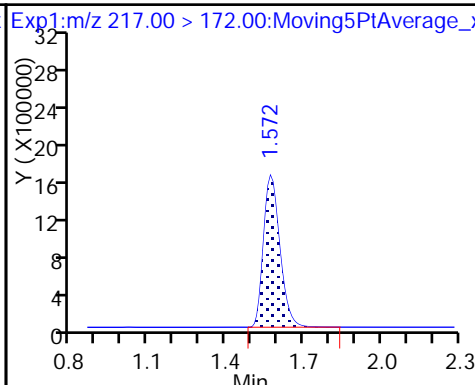
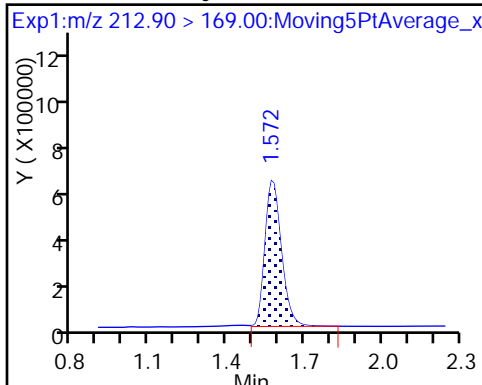
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

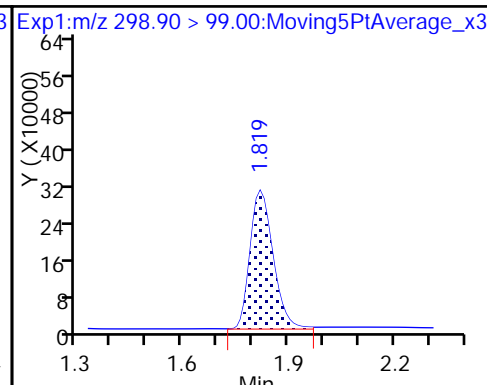
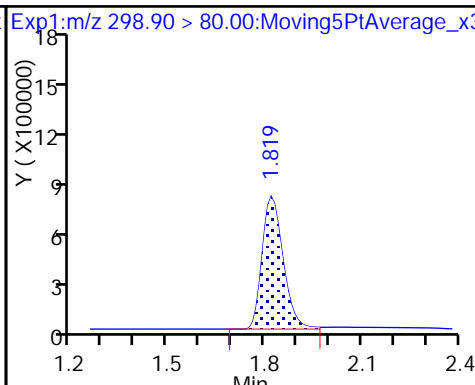
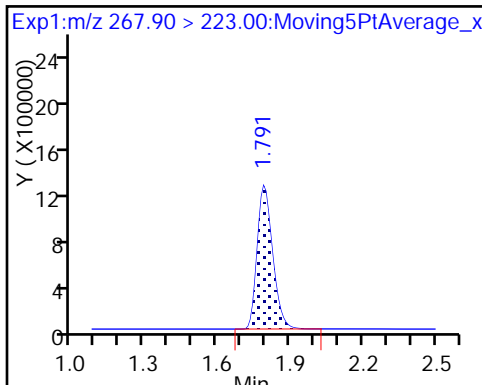
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

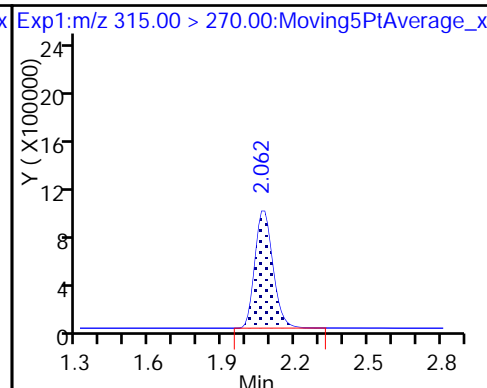
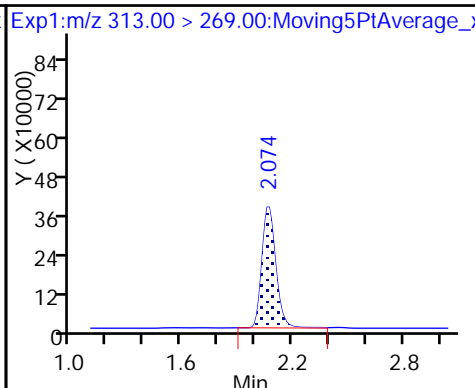
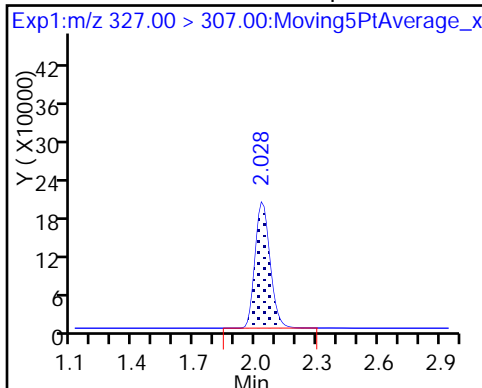
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

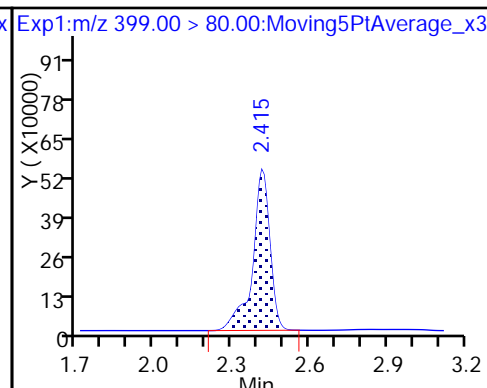
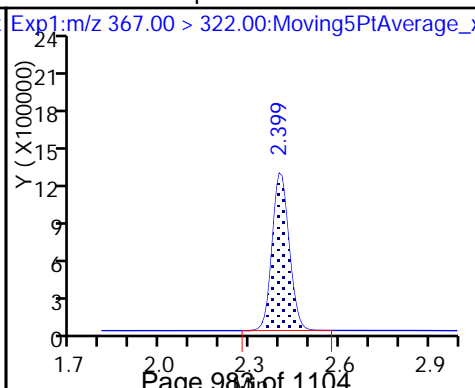
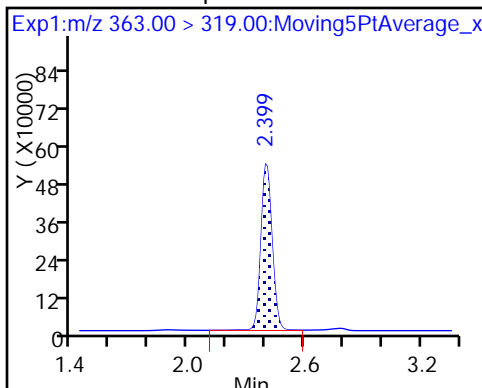
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

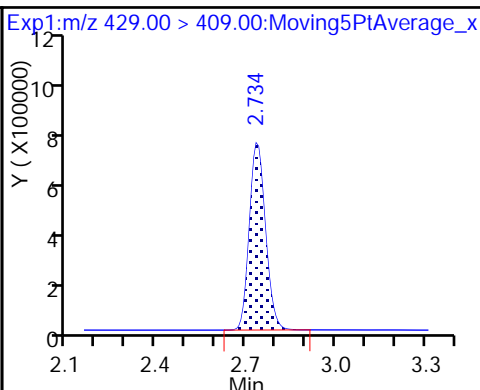
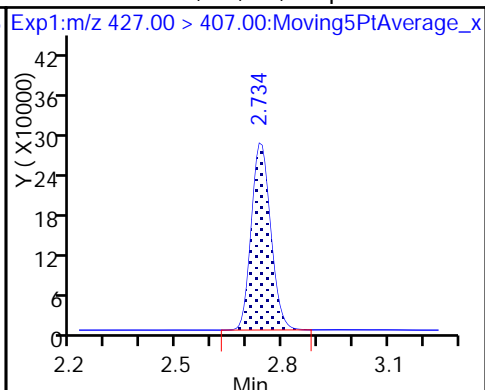
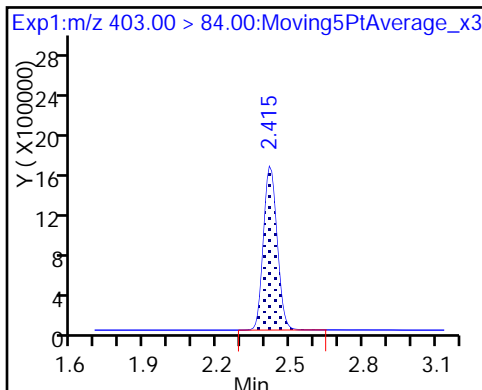
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

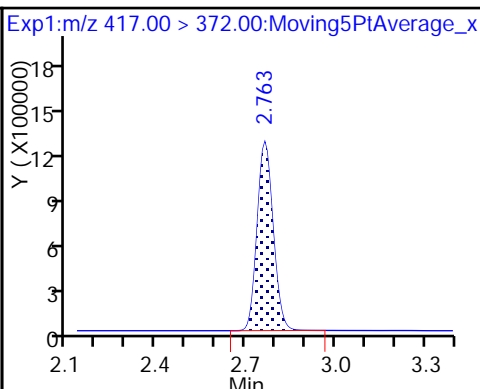
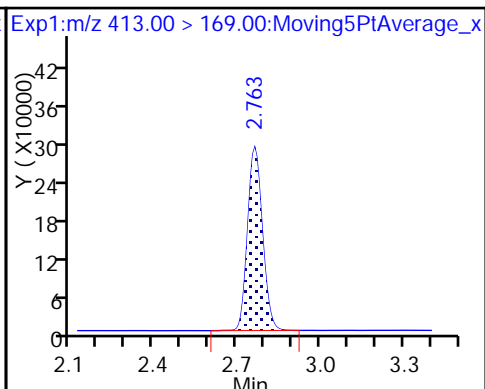
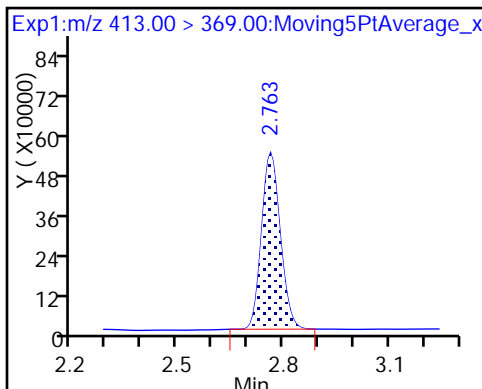
D 12 M2-6:2FTS



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

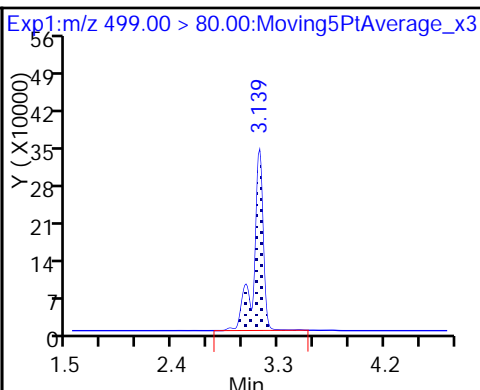
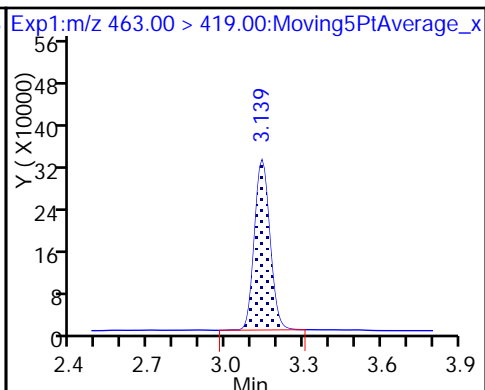
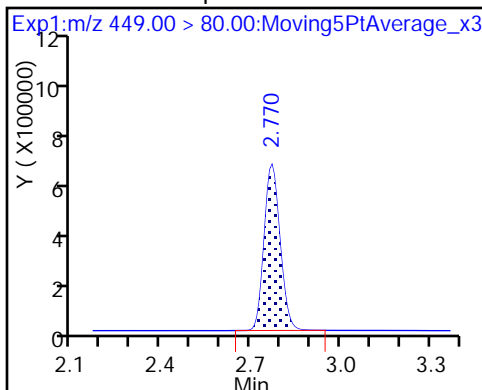
D 14 13C4 PFOA



16 Perfluoroheptanesulfonic Acid

20 Perfluorononanoic acid

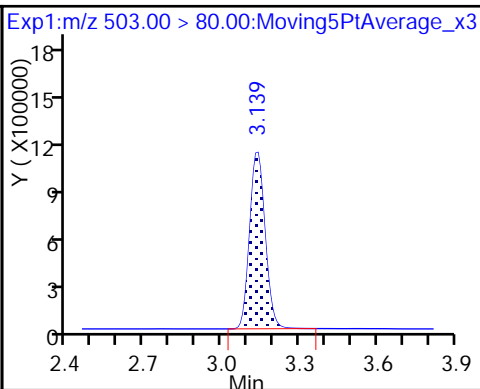
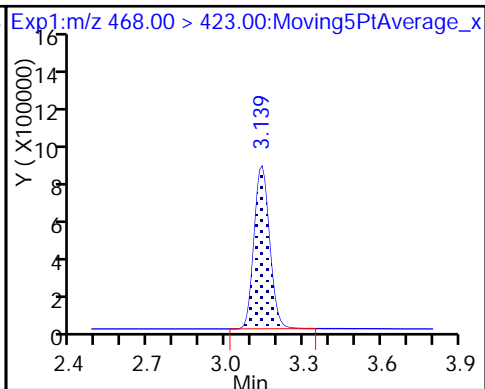
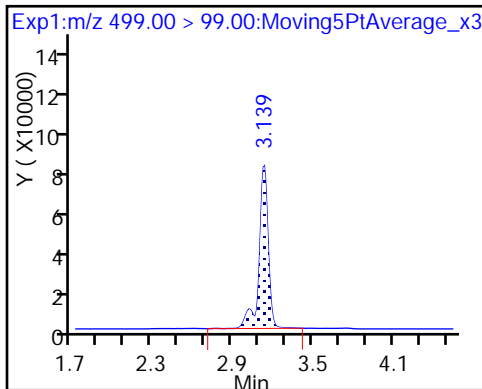
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

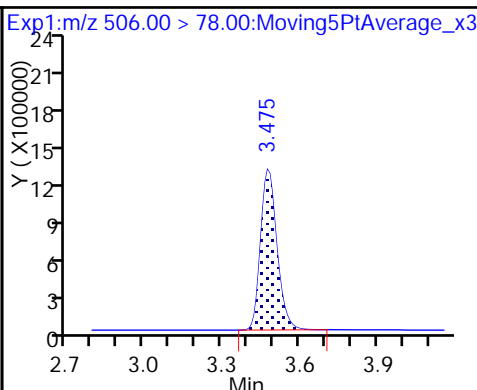
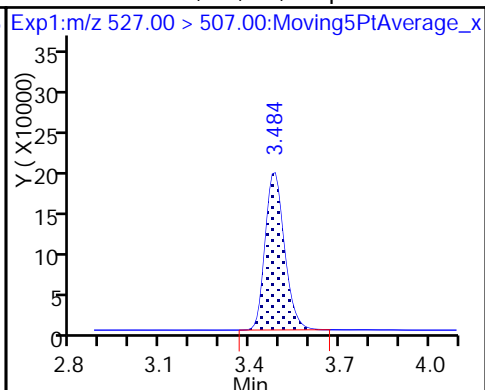
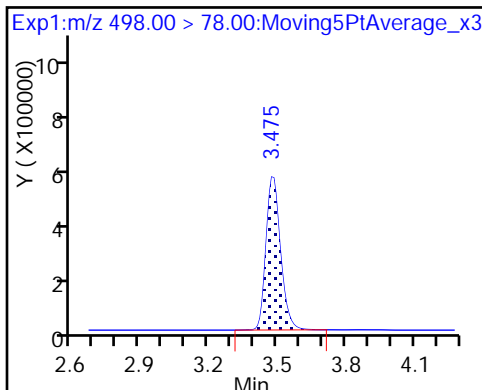
D 18 13C4 PFOS



22 Perfluorooctane Sulfonamide

25 Sodium 1H,1H,2H,2H-perfluorodeca

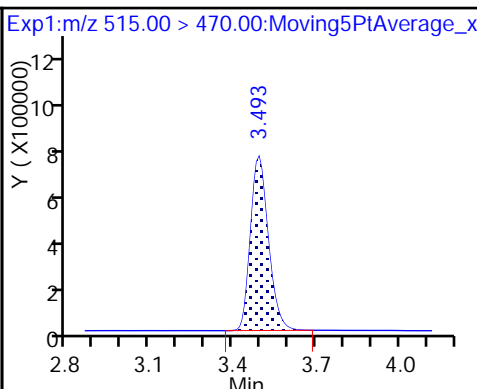
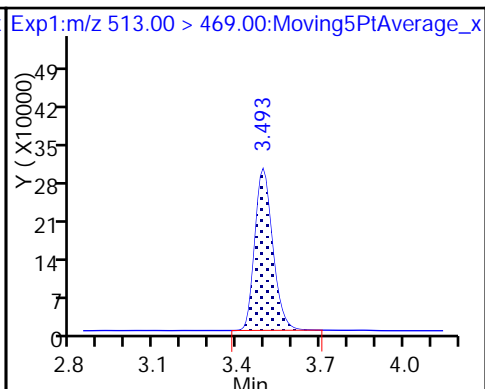
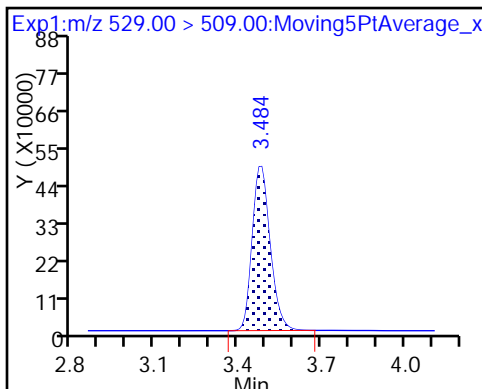
D 21 13C8 FOSA



D 26 M2-8:2FTS

24 Perfluorodecanoic acid

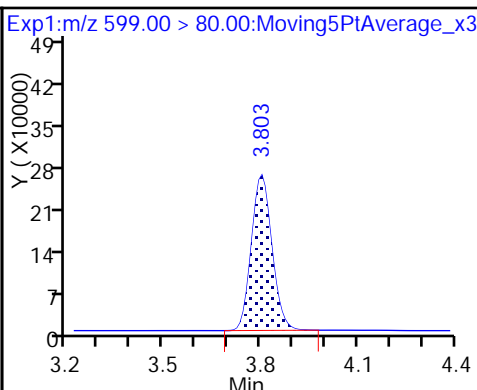
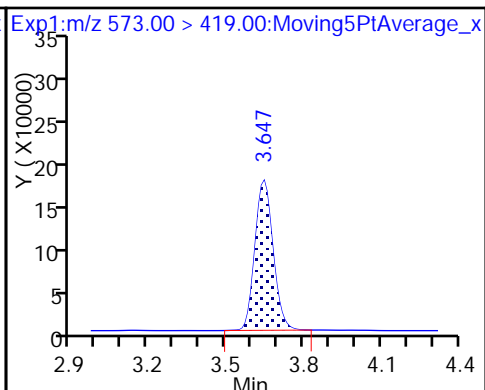
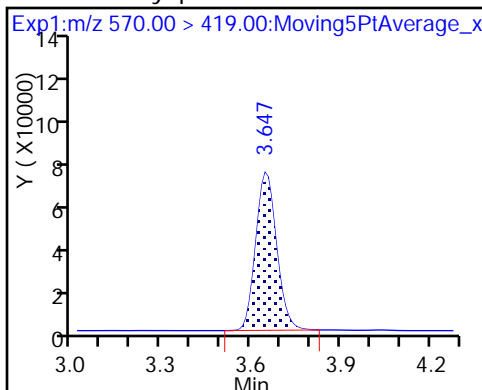
D 23 13C2 PFDA



28 N-methyl perfluorooctane sulfonamid

D 27 d3-NMeFOSAA

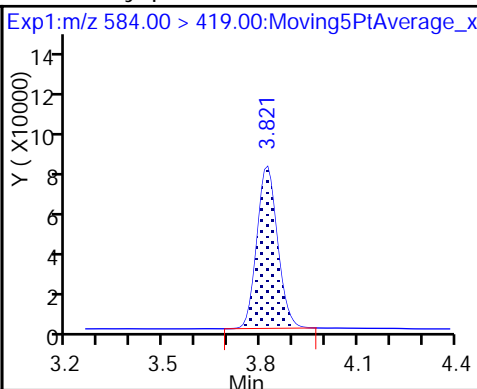
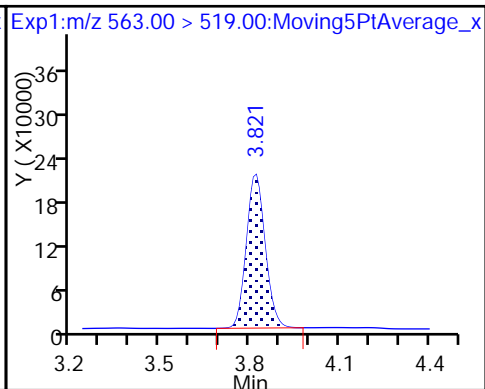
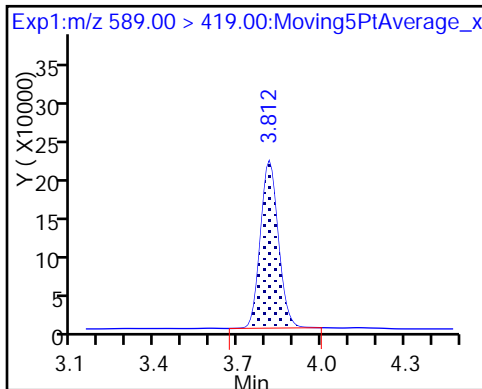
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid

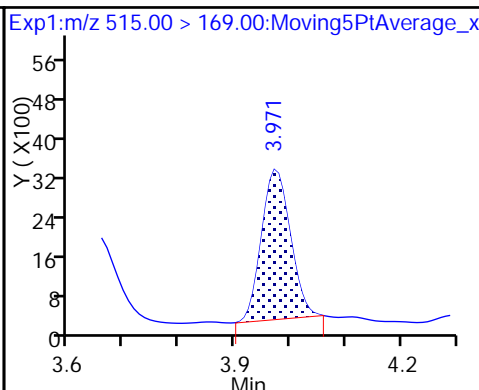
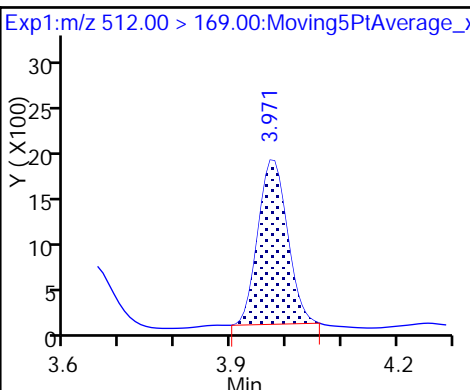
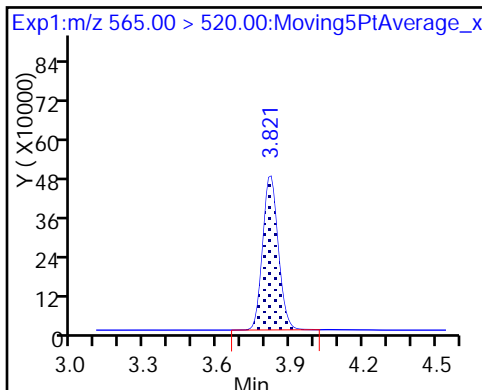
33 N-ethyl perfluorooctane sulfonamid



D 30 13C2 PFUnA

35 MeFOSA

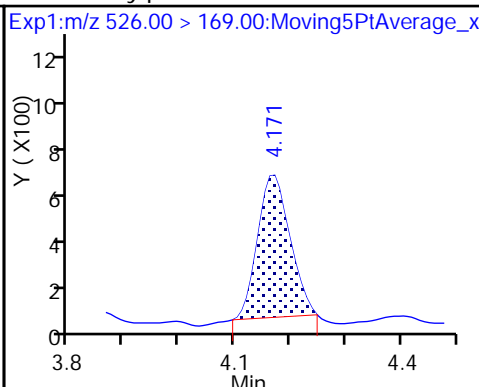
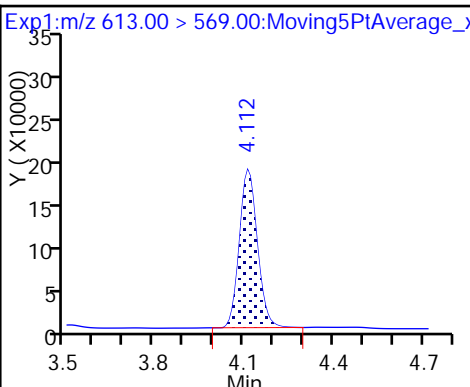
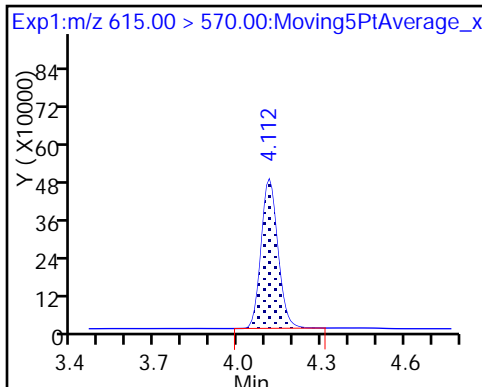
D 34 d-N-MeFOSA-M



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

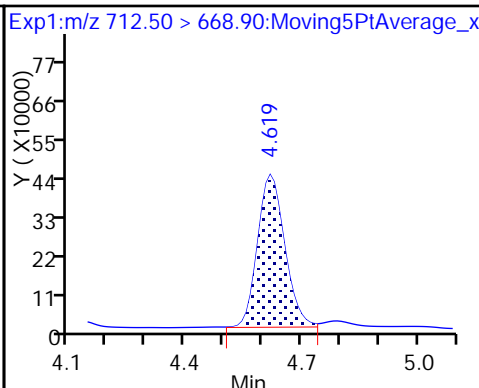
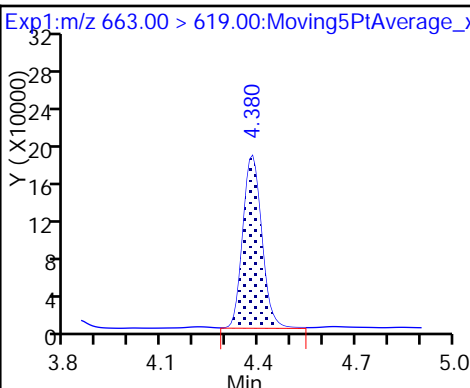
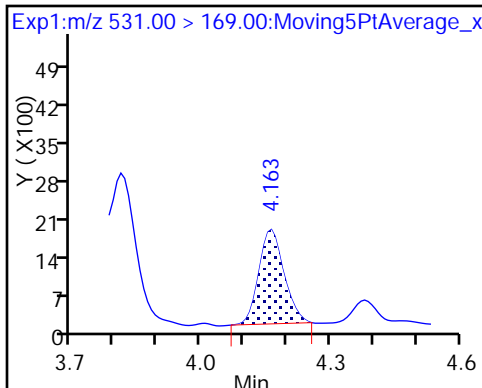
39 N-ethylperfluoro-1-octanesulfonami



D 38 d-N-EtFOSA-M

41 Perfluorotridecanoic acid

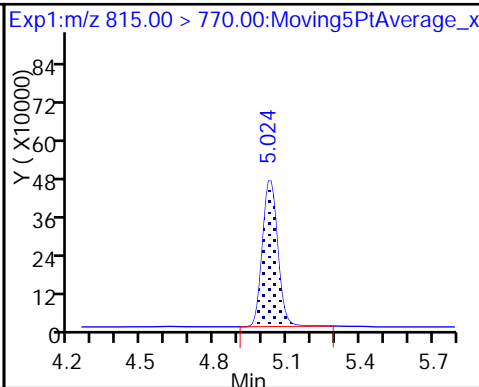
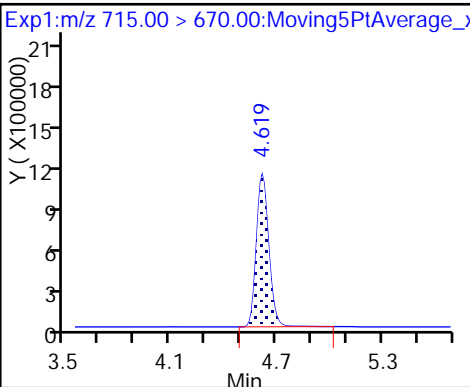
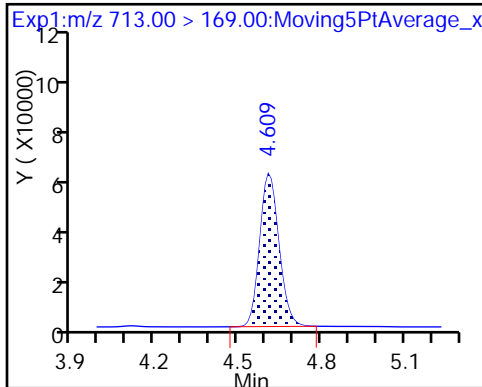
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

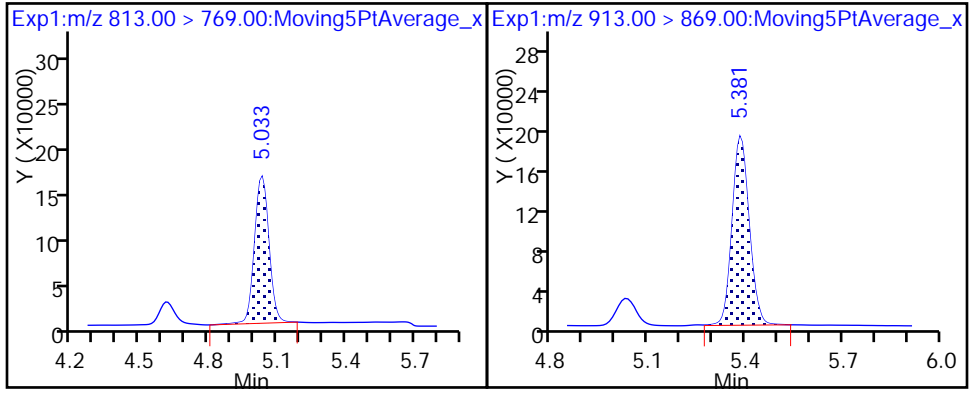
D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-174599/3-A
 Matrix: Water Lab File ID: 2017.07.21C_018.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 250 (mL) Date Analyzed: 07/21/2017 20:59
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|---|-----|-----|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 47.2 | | 2.5 | 1.0 | 0.46 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 43.9 | | 2.5 | 2.0 | 0.99 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 42.9 | | 2.5 | 2.0 | 0.79 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 43.3 | | 2.5 | 2.0 | 0.80 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 42.9 | | 2.5 | 2.0 | 0.75 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 42.8 | | 2.5 | 2.0 | 0.65 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 42.5 | | 2.5 | 1.0 | 0.44 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 40.6 | | 2.5 | 2.0 | 0.75 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 43.8 | | 2.5 | 2.0 | 0.58 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 46.6 | | 2.5 | 2.0 | 0.55 |
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 49.4 | | 2.5 | 1.0 | 0.40 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 37.4 | | 2.5 | 2.0 | 0.92 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 38.5 | | 2.5 | 2.0 | 0.87 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 41.6 | | 2.5 | 2.0 | 0.71 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 39.2 | | 4.0 | 3.0 | 1.3 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 38.4 | | 4.0 | 3.0 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 43.3 | | 40 | 2.0 | 0.64 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-174599/3-A
 Matrix: Water Lab File ID: 2017.07.21C_018.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 250 (mL) Date Analyzed: 07/21/2017 20:59
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 20 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 97 | | 25-150 |
| STL00993 | 13C2 PFHxA | 105 | | 25-150 |
| STL00990 | 13C4 PFOA | 125 | | 25-150 |
| STL00995 | 13C5 PFNA | 111 | | 25-150 |
| STL00996 | 13C2 PFDA | 128 | | 25-150 |
| STL00997 | 13C2 PFUnA | 117 | | 25-150 |
| STL00998 | 13C2 PFDoA | 101 | | 25-150 |
| STL00994 | 18O2 PFHxS | 97 | | 25-150 |
| STL00991 | 13C4 PFOS | 96 | | 25-150 |
| STL01892 | 13C4-PFHpA | 132 | | 25-150 |
| STL01893 | 13C5 PFPeA | 101 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_018.d
 Lims ID: LCSD 320-174599/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 21-Jul-2017 20:59:13 ALS Bottle#: 15 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-174599/3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 16:31:26 Calib Date: 20-Jul-2017 18:04:17
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:05:34

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.530 | 1.537 | -0.007 | 8725583 | 48.5 | | 97.0 | 29158 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.539 | 1.537 | 0.002 | 3750965 | 23.6 | | 118 | 1696 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.729 | 1.727 | 0.002 | 6061029 | 50.7 | | 101 | 49064 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.729 | 1.737 | -0.007 | 2655795 | 22.0 | | 110 | 1560 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.757 | 1.755 | 0.002 | 145253 | NC | | | 4393 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.757 | 1.755 | 0.002 | 4154408 | 18.7 | | 106 | 2918 | |
| | 298.90 > 99.00 | 1.757 | 1.755 | 0.002 | 1703534 | | 2.44(0.00-0.00) | | 2239 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 1.986 | 1.994 | -0.008 | 5823660 | 52.7 | | 105 | 35056 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 1.986 | 1.994 | -0.008 | 2340647 | 21.4 | | 107 | 4759 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.315 | 2.316 | -0.001 | 6421134 | 66.0 | | 132 | 30209 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.315 | 2.316 | -0.001 | 2803676 | 21.6 | | 108 | 5675 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.323 | 2.324 | -0.001 | 3075356 | 19.2 | | 106 | 2717 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.323 | 2.332 | -0.009 | 7391281 | 46.1 | | 97.5 | 32312 | |
| D 14 13C4 PFOA | 417.00 > 372.00 | 2.662 | 2.656 | 0.006 | 5470495 | 62.3 | | 125 | 34527 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.662 | 2.663 | -0.001 | 1.000 | 2457518 | 21.5 | | 107 | 593 | |
| 413.00 > 169.00 | 2.662 | 2.663 | -0.001 | 1.000 | 1433004 | | 1.71(0.90-1.10) | | 6908 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.669 | 2.670 | -0.001 | 1.000 | 2758660 | 20.8 | | 109 | 25169 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.026 | 3.029 | -0.003 | 1.000 | 2291797 | 19.6 | | 106 | 13567 | |
| 499.00 > 99.00 | 3.026 | 3.029 | -0.003 | 1.000 | 478284 | | 4.79(0.90-1.10) | | 3414 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.026 | 3.029 | -0.003 | 1.000 | 1641844 | 21.4 | | 107 | 3809 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.026 | 3.029 | -0.003 | | 5402752 | 45.8 | | 95.8 | 24097 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.026 | 3.029 | -0.003 | | 3837229 | 55.4 | | 111 | 20907 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.382 | 3.380 | 0.002 | 1.000 | 1535602 | 21.2 | | 106 | 5349 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.382 | 3.380 | 0.002 | | 3861395 | 63.8 | | 128 | 18312 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.390 | 3.388 | 0.002 | | 1990628 | 10.1 | | 20.3 | 14595 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.390 | 3.388 | 0.002 | 1.000 | 795156 | 21.6 | | 108 | 11311 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.700 | 3.690 | 0.010 | 1.000 | 1383707 | 19.2 | | 99.7 | 8993 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.710 | 3.709 | 0.001 | 1.000 | 1009382 | 20.3 | | 101 | 1865 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.710 | 3.709 | 0.001 | | 2453443 | 58.4 | | 117 | 8507 | |
| D 36 13C2 PFDoA | | | | | | | | | | |
| 615.00 > 570.00 | 4.004 | 4.004 | 0.0 | | 2198452 | 50.5 | | 101 | 4970 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.004 | 4.004 | 0.0 | 1.000 | 908530 | 21.9 | | 109 | 2140 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.266 | 4.266 | 0.0 | 1.000 | 872055 | 23.3 | | 117 | 390 | |
| D 43 13C2-PFTeDA | | | | | | | | | | |
| 715.00 > 670.00 | 4.498 | 4.498 | 0.0 | | 4957023 | 61.0 | | 122 | 29783 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | |
| 712.50 > 668.90 | 4.507 | 4.498 | 0.009 | 1.000 | 2113725 | 24.7 | | 123 | 838 | |
| 713.00 > 169.00 | 4.498 | 4.498 | 0.0 | 0.998 | 261455 | | 8.08(0.00-0.00) | | 5982 | |
| D 44 13C2-PFHxDA | | | | | | | | | | |
| 815.00 > 770.00 | 4.907 | 4.900 | 0.007 | | 2055406 | 48.4 | | 96.8 | 3258 | |
| 45 Perfluorohexadecanoic acid | | | | | | | | | | |
| 813.00 > 769.00 | 4.907 | 4.910 | -0.003 | 1.000 | 788248 | 20.3 | | 102 | 123 | |
| 46 Perfluorooctadecanoic acid | | | | | | | | | | |
| 913.00 > 869.00 | 5.241 | 5.243 | -0.002 | 1.000 | 762631 | 19.7 | | 98.7 | 347 | |

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_018.d

Injection Date: 21-Jul-2017 20:59:13

Instrument ID: A8_N

Lims ID: LCSD 320-174599/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

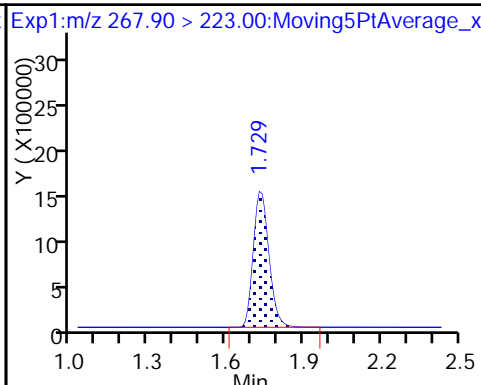
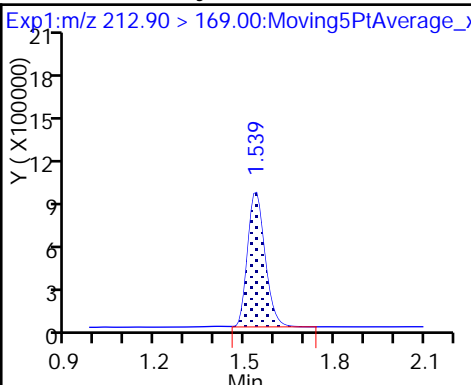
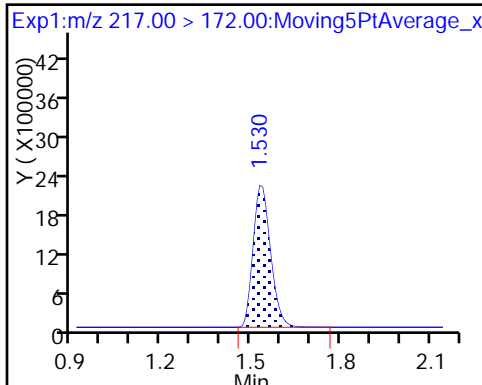
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

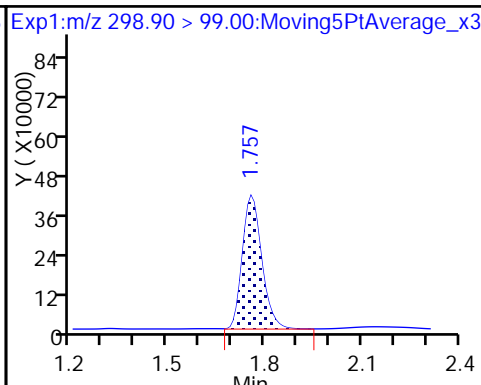
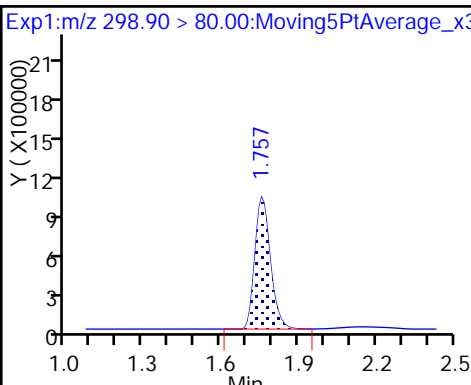
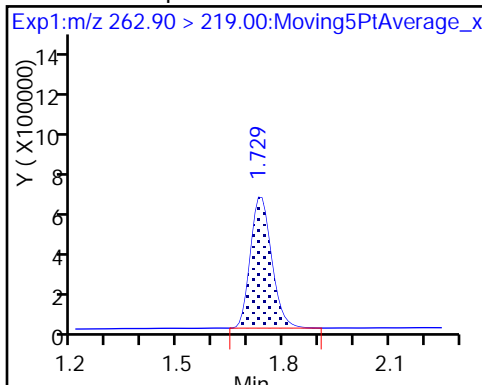
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

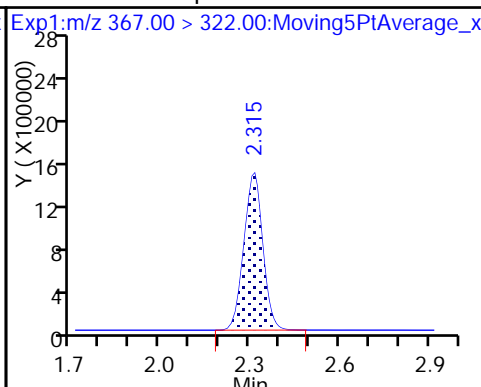
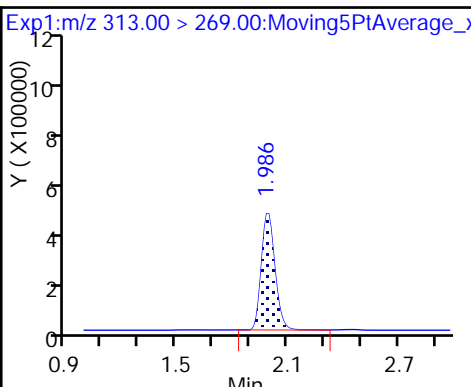
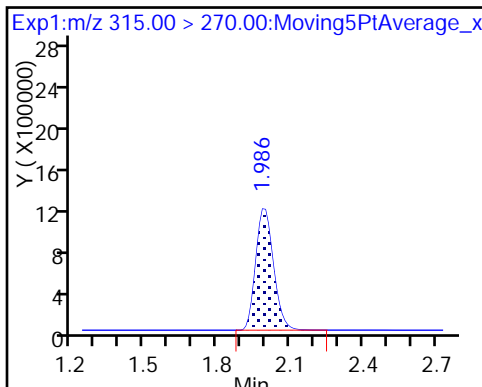
5 Perfluorobutanesulfonic acid



D 7 13C2 PFHxA

6 Perfluorohexanoic acid

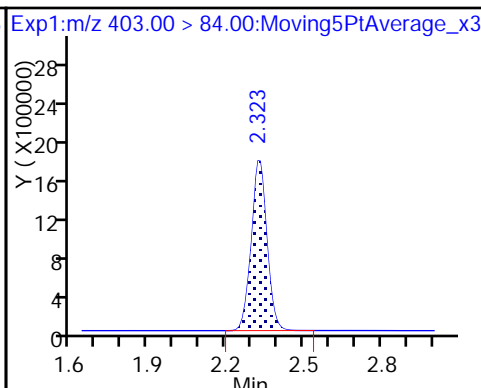
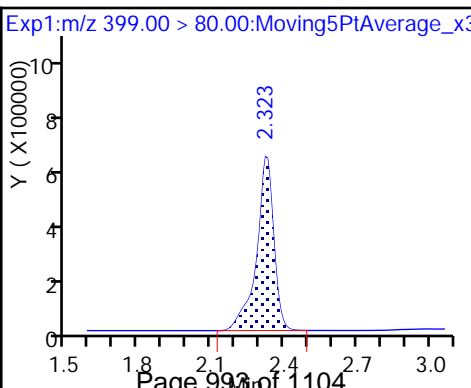
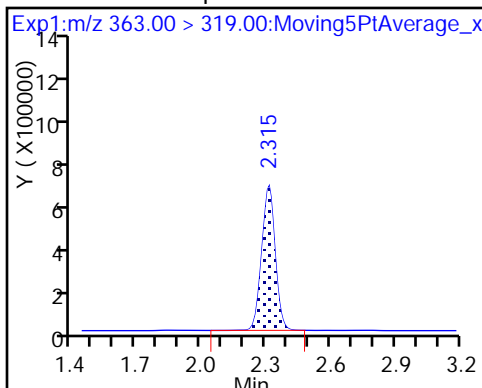
D 9 13C4-PFHpA



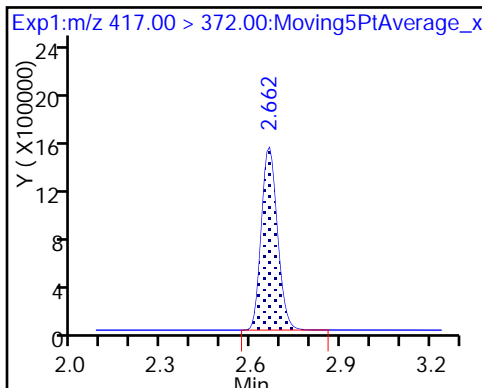
10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

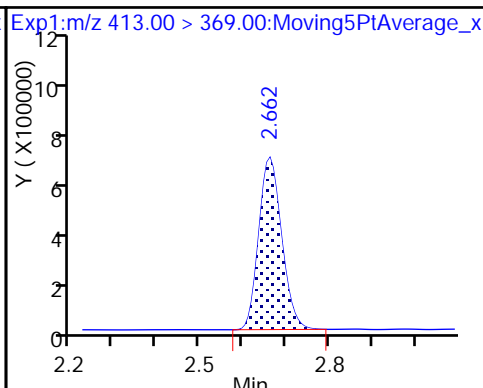
D 11 18O2 PFHxS



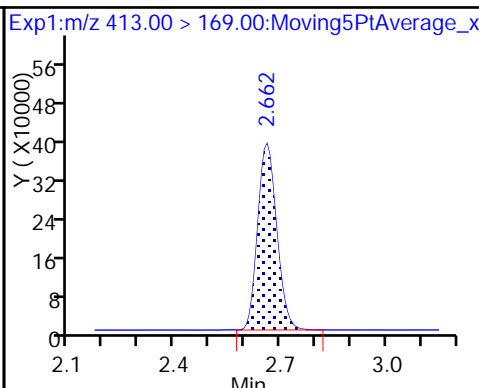
D 14 13C4 PFOA



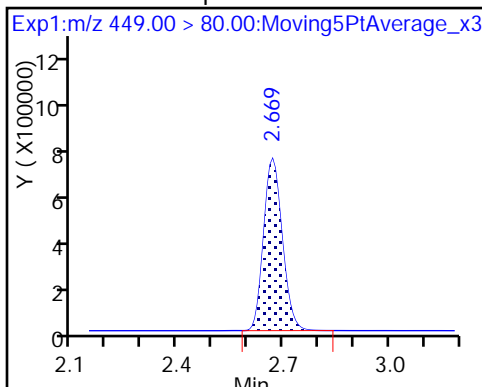
15 Perfluorooctanoic acid



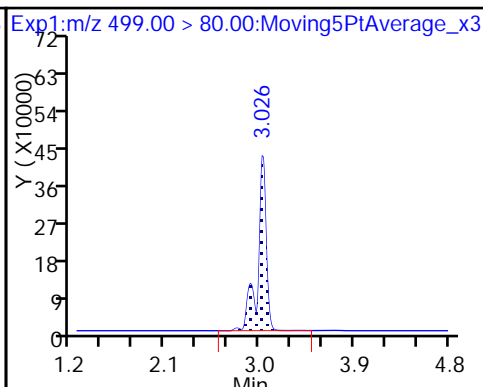
15 Perfluorooctanoic acid



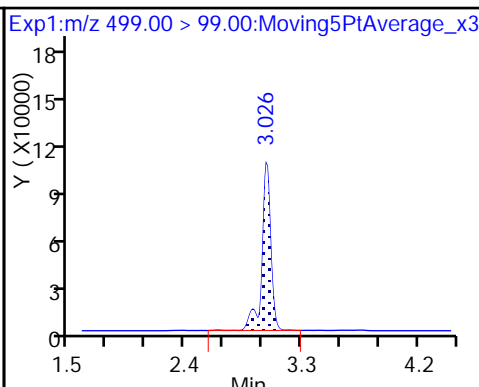
16 Perfluoroheptanesulfonic Acid



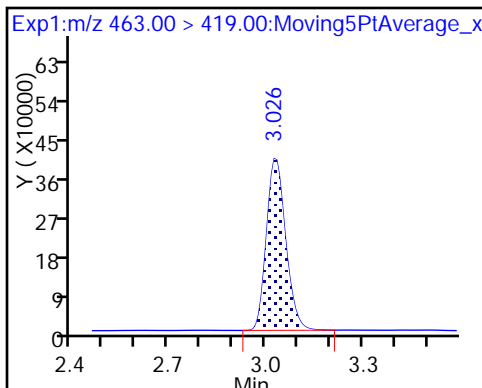
17 Perfluorooctane sulfonic acid



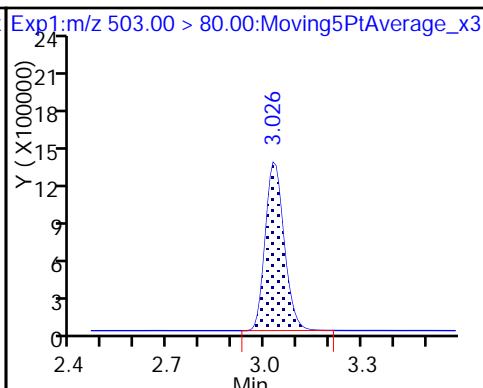
17 Perfluorooctane sulfonic acid



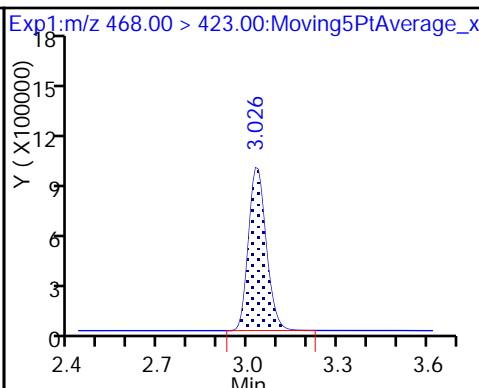
20 Perfluorononanoic acid



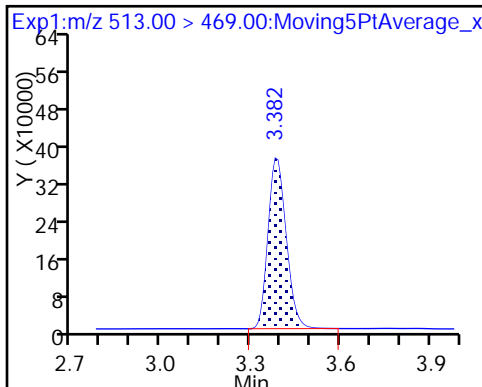
D 18 13C4 PFOS



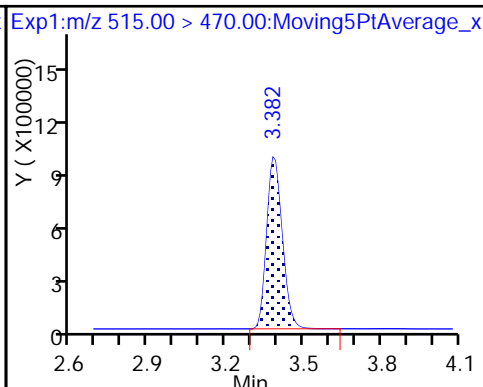
D 19 13C5 PFNA



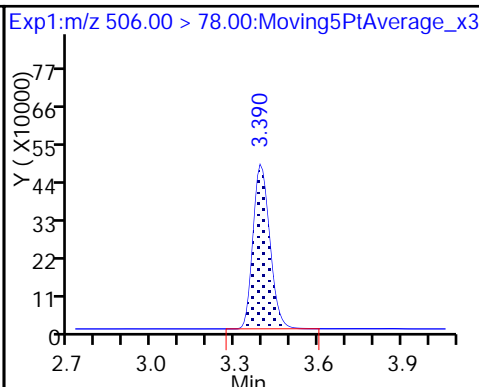
24 Perfluorodecanoic acid

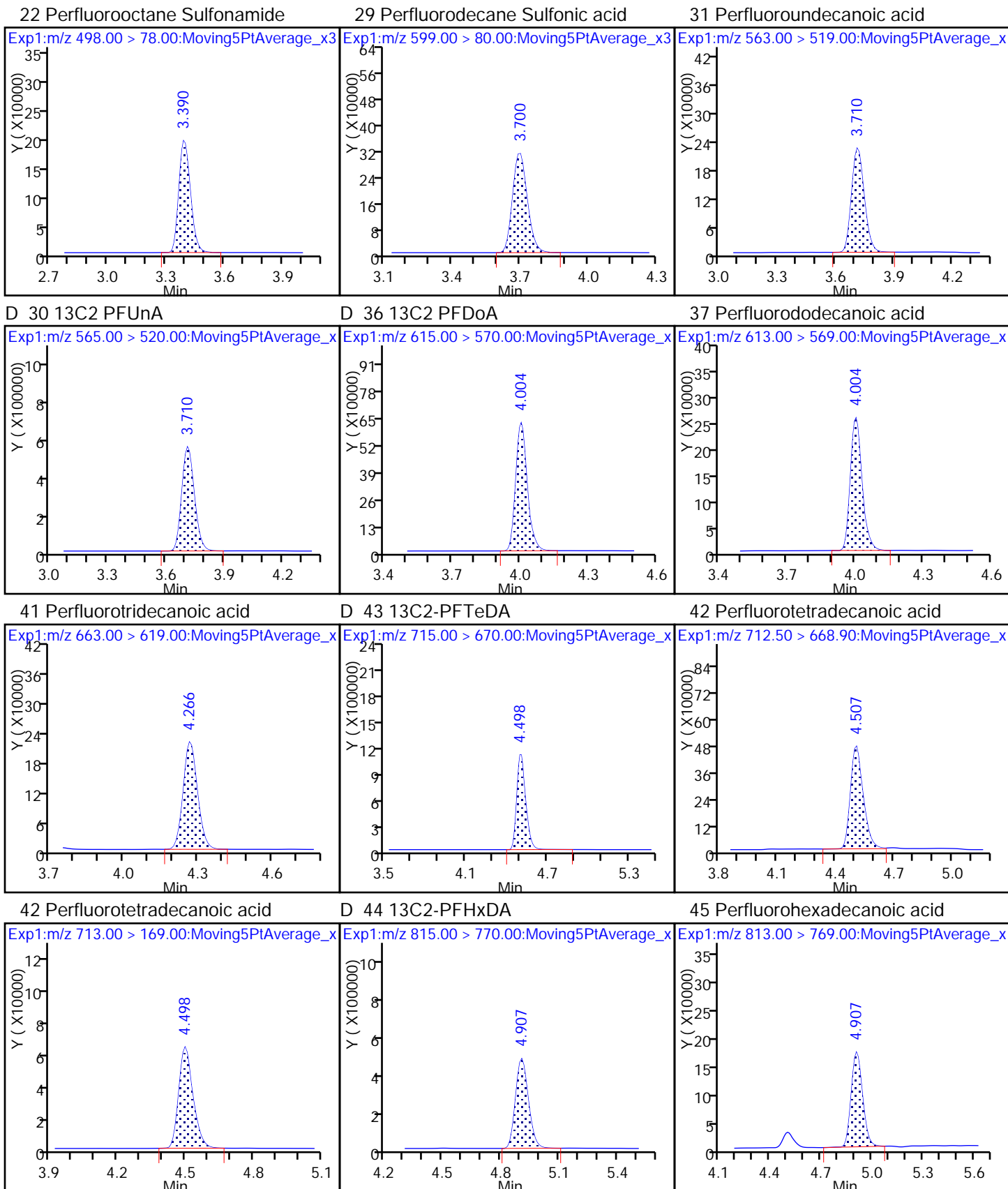


D 23 13C2 PFDA

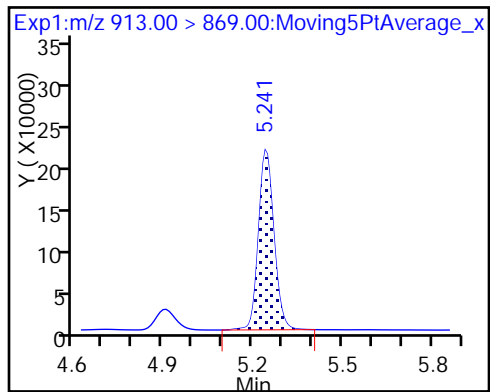


D 21 13C8 FOSA





46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-175074/3-A
 Matrix: Water Lab File ID: 2017.07.25B_004.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 09:15
 Sample wt/vol: 250.00 (mL) Date Analyzed: 07/25/2017 14:31
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175951 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|-------------------------------------|--------|---|-----|-----|------|
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 64.6 | Q | 2.5 | 1.0 | 0.40 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00998 | 13C2 PFDoA | 106 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_004.d
 Lims ID: LCSD 320-175074/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 25-Jul-2017 14:31:29 ALS Bottle#: 3 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-175074/3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.563 | 1.559 | 0.004 | 8694084 | 55.7 | | 111 | 27658 | |
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.563 | 1.559 | 0.004 | 1.000 | 3734093 | 24.3 | 122 | 1452 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.772 | 1.778 | -0.006 | 6137049 | 55.5 | | 111 | 45426 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.772 | 1.778 | -0.006 | 1.000 | 2842200 | 22.2 | 111 | 1640 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.791 | 1.797 | -0.006 | 157701 | NC | | | 6110 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.800 | 1.806 | -0.006 | 1.000 | 4883765 | 21.0 | 119 | 3005 | |
| | 298.90 > 99.00 | 1.800 | 1.806 | -0.006 | 1.000 | 1904784 | 2.56(0.00-0.00) | | 2371 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.040 | 2.058 | -0.018 | 5942225 | 58.7 | | 117 | 33750 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.040 | 2.058 | -0.018 | 1.000 | 2446068 | 21.6 | 108 | 4516 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.375 | 2.393 | -0.018 | 5604060 | 66.9 | | 134 | 25867 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.375 | 2.393 | -0.018 | 1.000 | 2512941 | 21.8 | 109 | 5086 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.391 | 2.409 | -0.018 | 7399790 | 53.8 | | 114 | 27979 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.391 | 2.409 | -0.018 | 1.000 | 3150128 | 18.6 | 102 | 2564 | |
| D 14 13C4 PFOA | 417.00 > 372.00 | 2.738 | 2.756 | -0.018 | 5149543 | 62.7 | | 125 | 28749 | |
| 15 Perfluorooctanoic acid | 413.00 > 369.00 | 2.738 | 2.756 | -0.018 | 1.000 | 2345960 | 21.4 | 107 | 561 | |
| | 413.00 > 169.00 | 2.738 | 2.756 | -0.018 | 1.000 | 1331040 | 1.76(0.90-1.10) | | 9350 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| 16 Perfluoroheptanesulfonic Acid | 449.00 | > 80.00 | 2.745 | 2.763 | -0.018 | 1.000 | 3009615 | 25.0 | 131 | 24014 |
| 17 Perfluorooctane sulfonic acid | 499.00 | > 80.00 | 3.106 | 3.131 | -0.025 | 1.000 | 2359869 | 20.8 | 112 | 6147 |
| | 499.00 | > 99.00 | 3.106 | 3.131 | -0.025 | 1.000 | 496461 | 4.75(0.90-1.10) | | 4207 |
| D 19 13C5 PFNA | 468.00 | > 423.00 | 3.115 | 3.131 | -0.016 | | 3690204 | 56.1 | 112 | 15739 |
| D 18 13C4 PFOS | 503.00 | > 80.00 | 3.106 | 3.131 | -0.025 | | 5133556 | 47.4 | 99.3 | 17189 |
| 20 Perfluorononanoic acid | 463.00 | > 419.00 | 3.115 | 3.140 | -0.025 | 1.000 | 1636417 | 21.8 | 109 | 3924 |
| D 21 13C8 FOSA | 506.00 | > 78.00 | 3.463 | 3.487 | -0.024 | | 6153090 | 33.7 | 67.3 | 9854 |
| D 23 13C2 PFDA | 515.00 | > 470.00 | 3.472 | 3.497 | -0.025 | | 3589108 | 64.3 | 129 | 10254 |
| 22 Perfluorooctane Sulfonamide | 498.00 | > 78.00 | 3.463 | 3.497 | -0.034 | 1.000 | 2516051 | 22.7 | 113 | 9416 |
| 24 Perfluorodecanoic acid | 513.00 | > 469.00 | 3.472 | 3.497 | -0.025 | 1.000 | 1533401 | 21.8 | 109 | 7641 |
| 29 Perfluorodecane Sulfonic acid | 599.00 | > 80.00 | 3.778 | 3.803 | -0.025 | 1.000 | 1546597 | 23.1 | 120 | 7476 |
| 31 Perfluoroundecanoic acid | 563.00 | > 519.00 | 3.798 | 3.822 | -0.024 | 1.000 | 1167163 | 22.5 | 112 | 2014 |
| D 30 13C2 PFUnA | 565.00 | > 520.00 | 3.798 | 3.822 | -0.024 | | 2517866 | 61.8 | 124 | 5644 |
| 37 Perfluorododecanoic acid | 613.00 | > 569.00 | 4.095 | 4.116 | -0.021 | 1.000 | 1008288 | 22.8 | 114 | 2575 |
| D 36 13C2 PFDoA | 615.00 | > 570.00 | 4.095 | 4.116 | -0.021 | | 2376327 | 53.2 | 106 | 4607 |
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.358 | 4.380 | -0.022 | 1.000 | 984492 | 24.3 | 122 | 324 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.604 | 4.614 | -0.010 | 1.000 | 2950665 | 32.3 | 162 | 224 |
| | 713.00 | > 169.00 | 4.593 | 4.614 | -0.021 | 0.998 | 368857 | 8.00(0.00-0.00) | | 5069 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.604 | 4.614 | -0.010 | | 6447544 | 79.4 | 159 | 29130 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.009 | 5.025 | -0.016 | 1.000 | 907022 | 23.4 | 117 | 150 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.009 | 5.025 | -0.016 | | 2321851 | 56.2 | 112 | 3589 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.367 | 5.383 | -0.016 | 1.000 | 818572 | 22.5 | 113 | 323 |

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_004.d

Injection Date: 25-Jul-2017 14:31:29

Instrument ID: A8_N

Lims ID: LCSD 320-175074/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

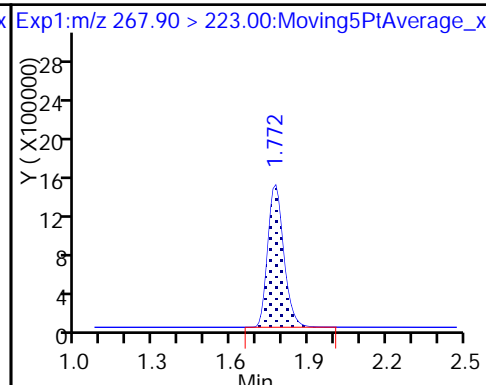
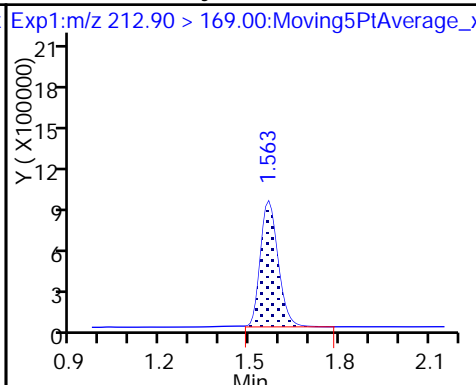
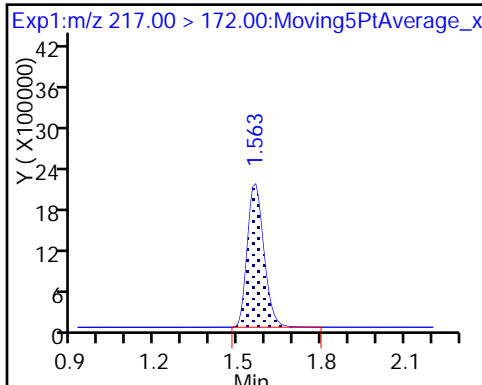
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

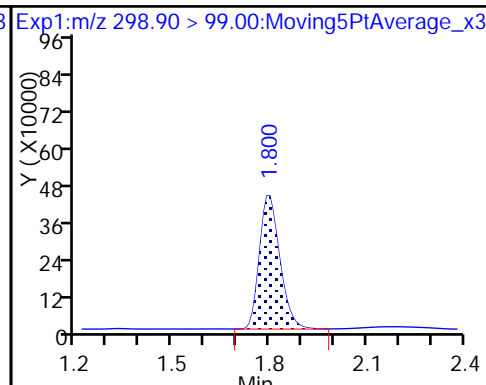
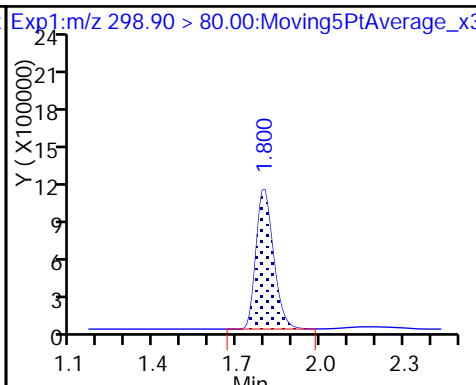
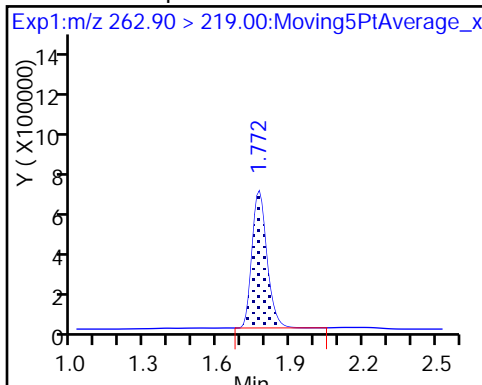
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

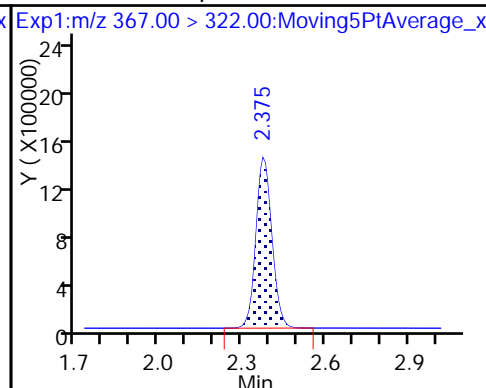
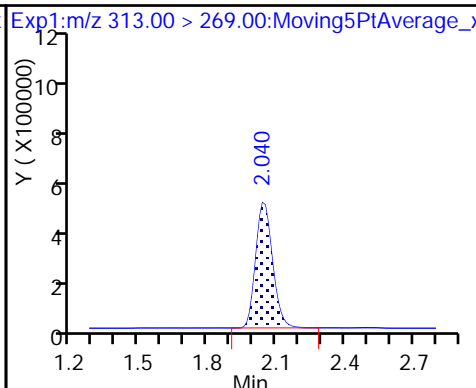
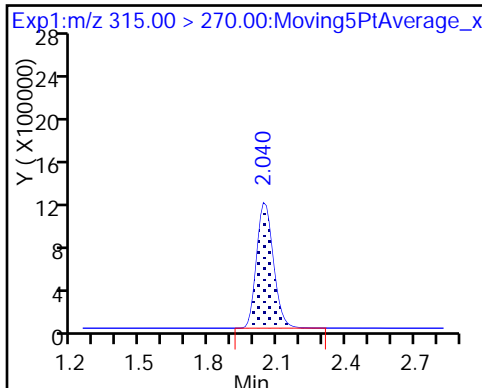
5 Perfluorobutanesulfonic acid



D 7 13C2 PFHxA

6 Perfluorohexanoic acid

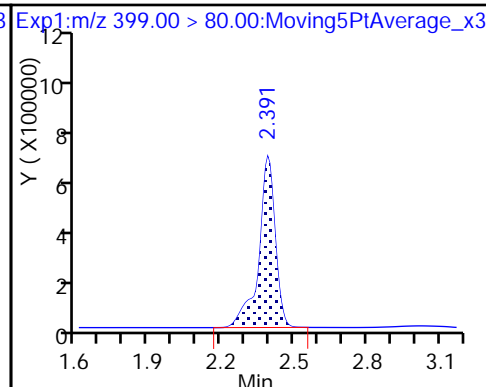
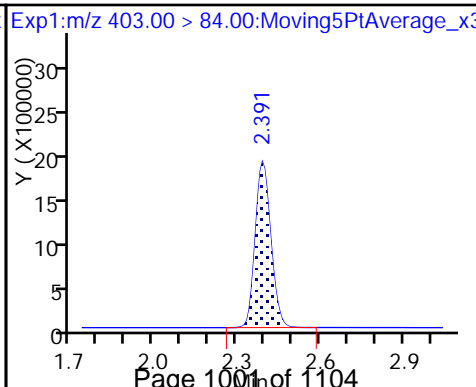
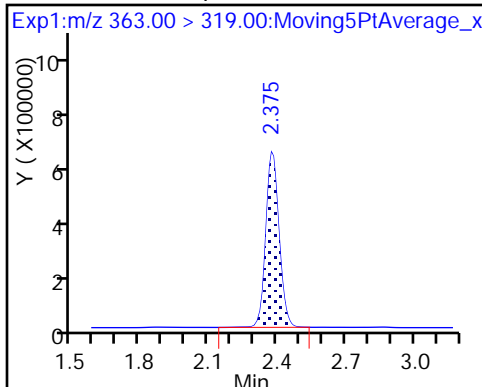
D 9 13C4-PFHpA



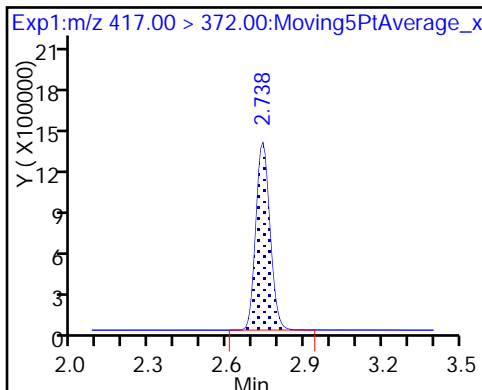
10 Perfluoroheptanoic acid

D 11 18O2 PFHxS

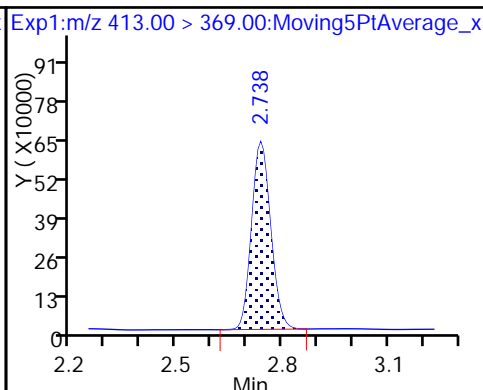
8 Perfluorohexanesulfonic acid



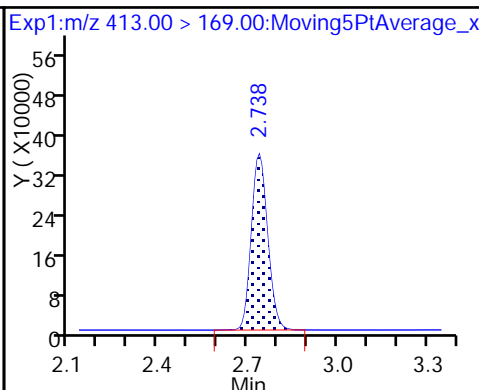
D 14 13C4 PFOA



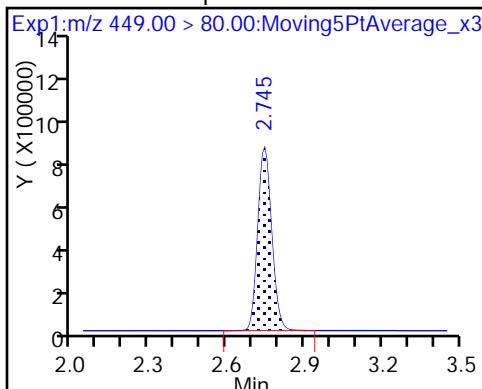
15 Perfluorooctanoic acid



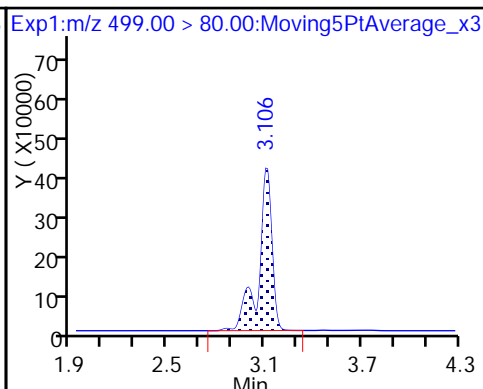
15 Perfluorooctanoic acid



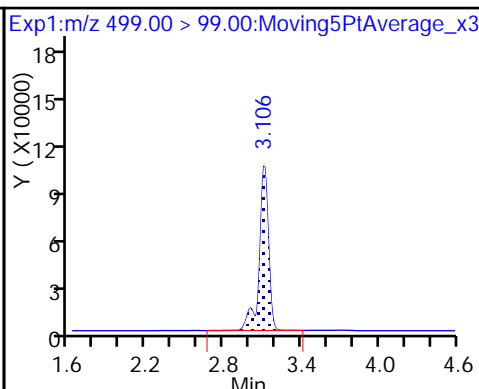
16 Perfluoroheptanesulfonic Acid



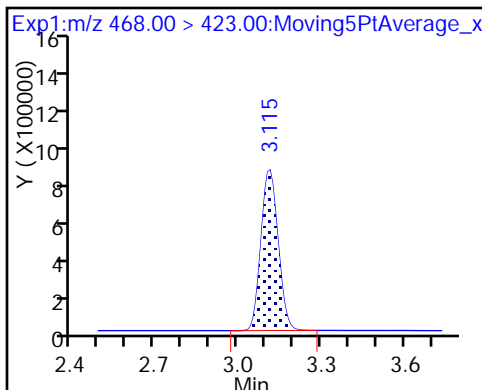
17 Perfluorooctane sulfonic acid



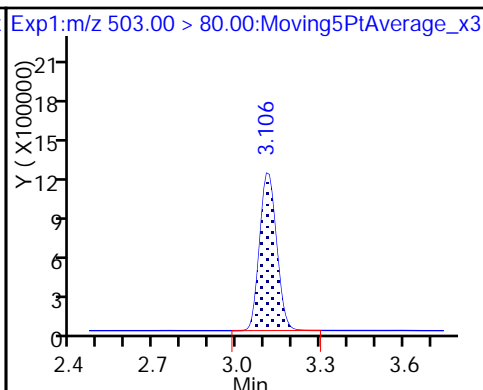
17 Perfluorooctane sulfonic acid



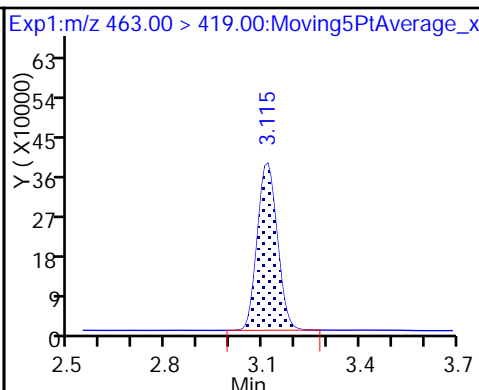
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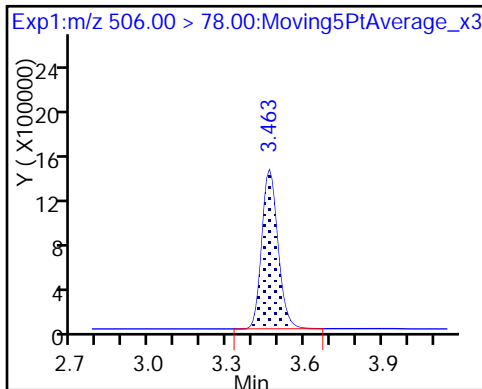
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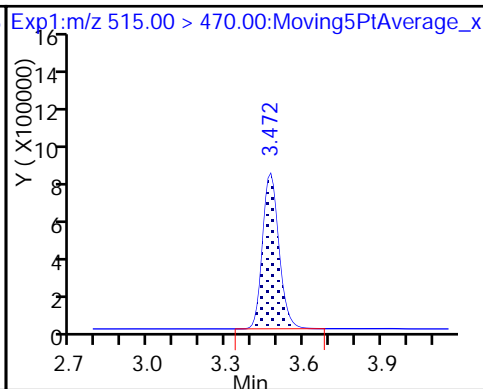
20 Perfluorononanoic acid



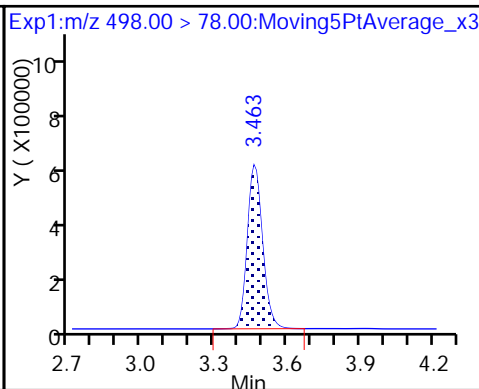
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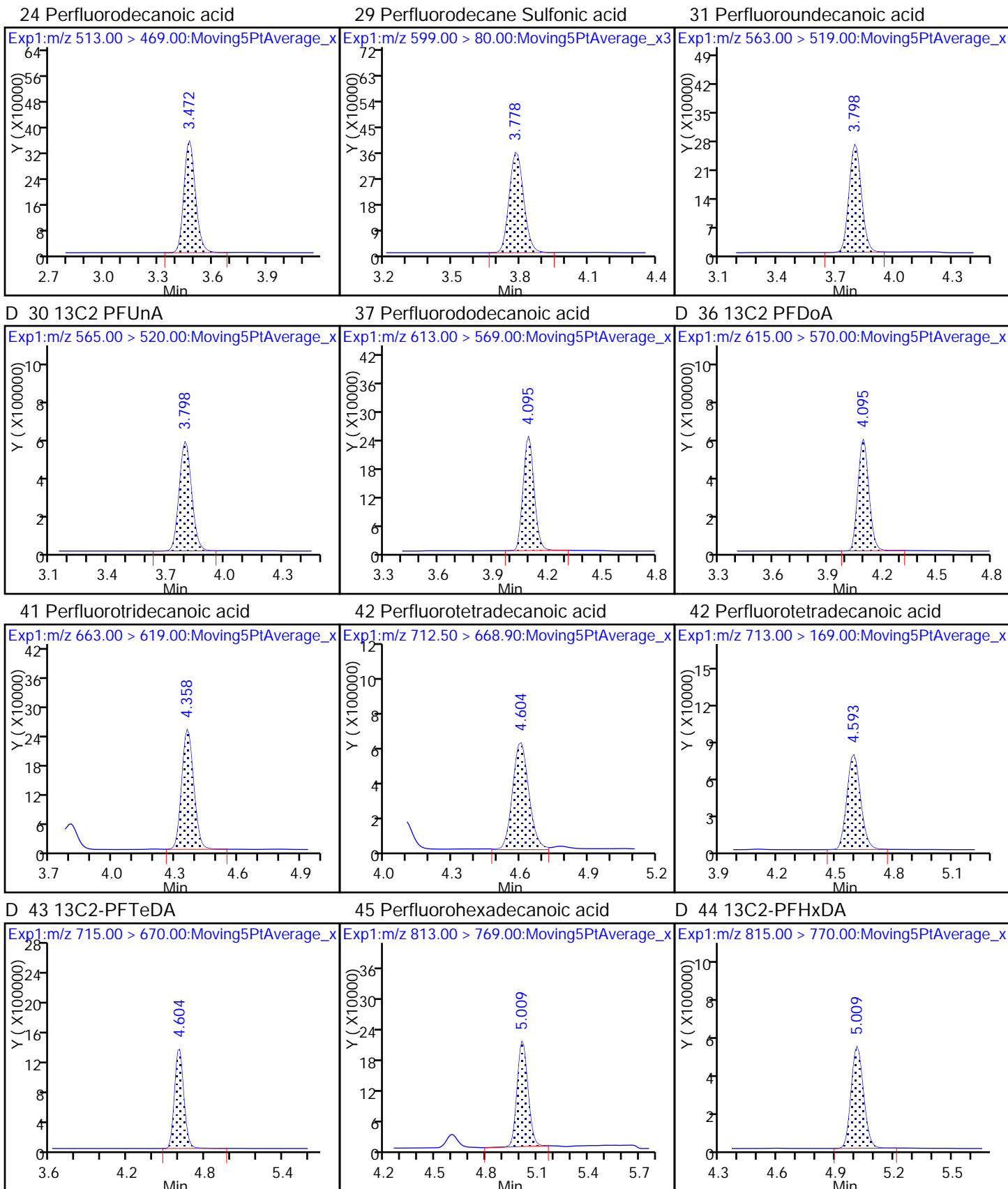


D 23 13C2 PFDA

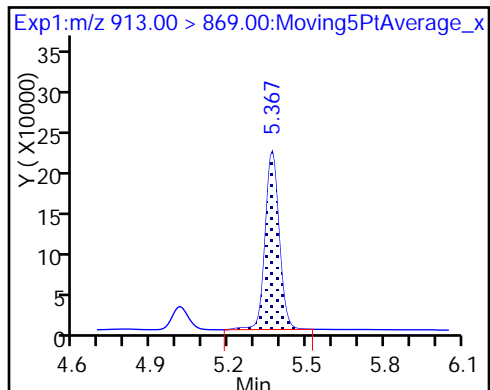


22 Perfluorooctane Sulfonamide





46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-175097/3-A
 Matrix: Water Lab File ID: 2017.07.23A_004.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250 (mL) Date Analyzed: 07/23/2017 14:53
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|---|-----|-----|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 45.8 | | 2.5 | 1.0 | 0.46 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 43.1 | | 2.5 | 2.0 | 0.99 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 43.2 | | 2.5 | 2.0 | 0.79 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 42.3 | | 2.5 | 2.0 | 0.80 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 41.6 | | 2.5 | 2.0 | 0.75 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 40.9 | | 2.5 | 2.0 | 0.65 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 39.8 | | 2.5 | 1.0 | 0.44 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 42.6 | | 2.5 | 2.0 | 0.75 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 45.0 | | 2.5 | 2.0 | 0.58 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 48.6 | | 2.5 | 2.0 | 0.55 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 39.5 | | 2.5 | 2.0 | 0.92 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 35.3 | | 2.5 | 2.0 | 0.87 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 45.3 | | 2.5 | 2.0 | 0.71 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 41.3 | | 4.0 | 3.0 | 1.3 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 43.3 | | 4.0 | 3.0 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 44.6 | | 40 | 2.0 | 0.64 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-175097/3-A
 Matrix: Water Lab File ID: 2017.07.23A_004.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250 (mL) Date Analyzed: 07/23/2017 14:53
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 25 | | 25-150 |
| STL00992 | 13C4 PFBA | 111 | | 25-150 |
| STL00993 | 13C2 PFHxA | 105 | | 25-150 |
| STL00990 | 13C4 PFOA | 116 | | 25-150 |
| STL00995 | 13C5 PFNA | 105 | | 25-150 |
| STL00996 | 13C2 PFDA | 128 | | 25-150 |
| STL00997 | 13C2 PFUnA | 104 | | 25-150 |
| STL00998 | 13C2 PFDoA | 94 | | 25-150 |
| STL00994 | 18O2 PFHxS | 108 | | 25-150 |
| STL00991 | 13C4 PFOS | 95 | | 25-150 |
| STL01892 | 13C4-PFHpA | 124 | | 25-150 |
| STL01893 | 13C5 PFPeA | 104 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_004.d
 Lims ID: LCSD 320-175097/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 23-Jul-2017 14:53:38 ALS Bottle#: 3 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-175097/3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Jul-2017 12:07:17 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1
 Process Host: XAWRK004

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | 212.90 > 169.00 | 1.554 | 1.556 | -0.002 | 1.000 | 3509487 | 22.9 | 114 | 1684 | |
| D 1 13C4 PFBA | 217.00 > 172.00 | 1.554 | 1.556 | -0.002 | | 8691501 | 55.7 | 111 | 39031 | |
| 4 Perfluoropentanoic acid | 262.90 > 219.00 | 1.764 | 1.775 | -0.011 | 1.000 | 2577000 | 21.6 | 108 | 1626 | |
| D 3 13C5-PFPeA | 267.90 > 223.00 | 1.764 | 1.775 | -0.011 | | 5736917 | 51.9 | 104 | 65141 | |
| D 47 13C3-PFBS | 301.90 > 83.00 | 1.791 | 1.793 | -0.002 | | 147917 | NC | | 4337 | |
| 5 Perfluorobutanesulfonic acid | 298.90 > 80.00 | 1.791 | 1.802 | -0.011 | 1.000 | 4388253 | 19.8 | 112 | 2753 | |
| | 298.90 > 99.00 | 1.791 | 1.802 | -0.011 | 1.000 | 1735452 | 2.53(0.00-0.00) | | 1992 | |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 > 307.00 | 2.006 | 2.020 | -0.014 | 1.000 | 1121684 | 20.6 | 111 | 32124 | |
| 6 Perfluorohexanoic acid | 313.00 > 269.00 | 2.052 | 2.055 | -0.003 | 1.000 | 2177758 | 21.6 | 108 | 4519 | |
| D 7 13C2 PFHxA | 315.00 > 270.00 | 2.052 | 2.055 | -0.003 | | 5297800 | 52.4 | 105 | 42103 | |
| 10 Perfluoroheptanoic acid | 363.00 > 319.00 | 2.389 | 2.403 | -0.014 | 1.000 | 2262028 | 21.1 | 106 | 4587 | |
| D 9 13C4-PFHpA | 367.00 > 322.00 | 2.389 | 2.403 | -0.014 | | 5213510 | 62.2 | 124 | 30328 | |
| 8 Perfluorohexanesulfonic acid | 399.00 > 80.00 | 2.405 | 2.419 | -0.014 | 1.000 | 2851067 | 17.7 | 97.1 | 2396 | |
| D 11 18O2 PFHxS | 403.00 > 84.00 | 2.405 | 2.419 | -0.014 | | 7053358 | 51.3 | 108 | 49342 | |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 > 407.00 | 2.735 | 2.742 | -0.007 | 1.000 | 1236293 | 24.7 | 130 | 33279 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 12 M2-6:2FTS | | | | | | | | | | |
| 429.00 > 409.00 | 2.735 | 2.742 | -0.007 | | 2656345 | 55.9 | | 118 | 33980 | |
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.764 | 2.771 | -0.007 | 1.000 | 2108815 | 20.8 | | 104 | 586 | |
| 413.00 > 169.00 | 2.764 | 2.771 | -0.007 | 1.000 | 1287952 | | 1.64(0.90-1.10) | | 7582 | |
| D 14 13C4 PFOA | | | | | | | | | | |
| 417.00 > 372.00 | 2.764 | 2.771 | -0.007 | | 4754215 | 57.9 | | 116 | 36991 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.771 | 2.778 | -0.007 | 1.000 | 2623556 | 22.7 | | 119 | 25321 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.149 | 3.151 | -0.002 | 1.000 | 2256085 | 20.7 | | 111 | 98576 | |
| 499.00 > 99.00 | 3.149 | 3.151 | -0.002 | 1.000 | 444425 | | 5.08(0.90-1.10) | | 2784 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.149 | 3.151 | -0.002 | 1.000 | 1431322 | 20.5 | | 102 | 5136 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.140 | 3.151 | -0.011 | | 4936070 | 45.6 | | 95.4 | 18984 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.149 | 3.151 | -0.002 | | 3436772 | 52.3 | | 105 | 18774 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | | | | | | | | | | |
| 527.00 > 507.00 | 3.498 | 3.497 | 0.001 | 1.000 | 1152681 | 23.3 | | 121 | 21490 | |
| D 26 M2-8:2FTS | | | | | | | | | | |
| 529.00 > 509.00 | 3.498 | 3.497 | 0.001 | | 2604796 | 71.4 | | 149 | 14906 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.498 | 3.507 | -0.009 | | 2291784 | 12.5 | | 25.1 | 15226 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.498 | 3.507 | -0.009 | 1.000 | 922281 | 22.3 | | 112 | 9050 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.507 | 3.507 | 0.0 | | 3583884 | 64.2 | | 128 | 10977 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.507 | 3.507 | 0.0 | 1.000 | 1398219 | 19.9 | | 99.5 | 6124 | |
| D 27 d3-NMeFOSAA | | | | | | | | | | |
| 573.00 > 419.00 | 3.663 | 3.658 | 0.005 | | 1027237 | 47.3 | | 94.5 | 9386 | |
| 28 N-methyl perfluorooctane sulfonami | | | | | | | | | | |
| 570.00 > 419.00 | 3.673 | 3.669 | 0.004 | 1.003 | 476585 | 25.5 | | 127 | 9026 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.817 | 3.815 | 0.002 | 1.000 | 1392460 | 21.7 | | 112 | 12023 | |
| D 32 d5-NEtFOSAA | | | | | | | | | | |
| 589.00 > 419.00 | 3.834 | 3.824 | 0.010 | | 1046491 | 47.7 | | 95.4 | 3472 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.834 | 3.833 | 0.001 | 1.000 | 932030 | 21.3 | | 107 | 2284 | |
| 33 N-ethyl perfluorooctane sulfonamid | | | | | | | | | | |
| 584.00 > 419.00 | 3.834 | 3.833 | 0.001 | 1.000 | 438745 | 24.7 | | 123 | 5336 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.834 | 3.833 | 0.001 | | 2122146 | 52.1 | | 104 | 9925 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.129 | 4.123 | 0.006 | 1.000 | 875818 | 22.5 | | 113 | 980 | |
| D 36 13C2 PFDoA | | | | | | | | | | |
| 615.00 > 570.00 | 4.129 | 4.123 | 0.006 | | 2092501 | 46.9 | | 93.7 | 6819 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| 41 Perfluorotridecanoic acid | 663.00 | > 619.00 | 4.397 | 4.388 | 0.009 | 1.000 | 866332 | 24.3 | 122 | 328 |
| D 43 13C2-PFTeDA | 715.00 | > 670.00 | 4.629 | 4.619 | 0.011 | | 6742474 | 83.0 | 166 | 40301 |
| 42 Perfluorotetradecanoic acid | 712.50 | > 668.90 | 4.640 | 4.630 | 0.010 | 1.000 | 2750203 | 34.2 | 171 | 264 |
| | 713.00 | > 169.00 | 4.629 | 4.630 | -0.001 | 0.998 | 373628 | 7.36(0.00-0.00) | | 6590 |
| 45 Perfluorohexadecanoic acid | 813.00 | > 769.00 | 5.043 | 5.030 | 0.013 | 1.000 | 786258 | 23.1 | 115 | 195 |
| D 44 13C2-PFHxDA | 815.00 | > 770.00 | 5.043 | 5.030 | 0.013 | | 2000945 | 48.4 | 96.9 | 5398 |
| 46 Perfluorooctadecanoic acid | 913.00 | > 869.00 | 5.392 | 5.381 | 0.011 | 1.000 | 687122 | 21.5 | 107 | 301 |

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_004.d

Injection Date: 23-Jul-2017 14:53:38

Instrument ID: A8_N

Lims ID: LCSD 320-175097/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

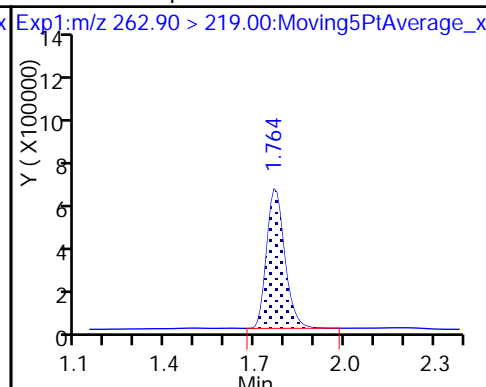
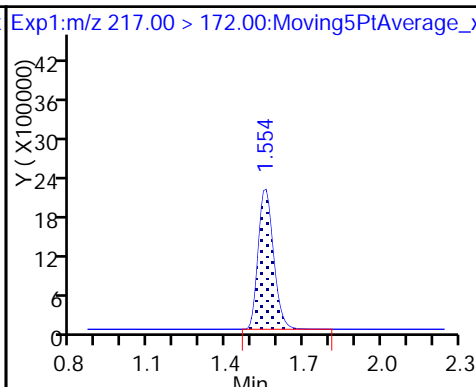
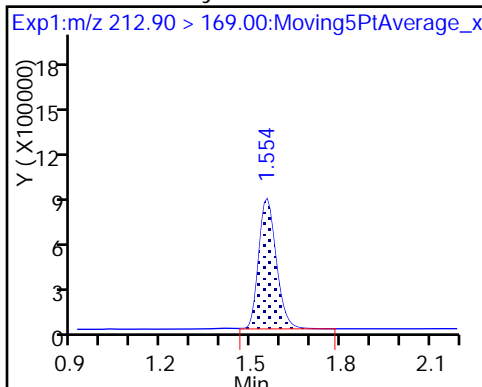
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

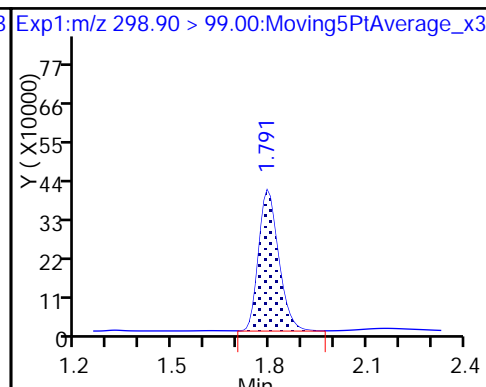
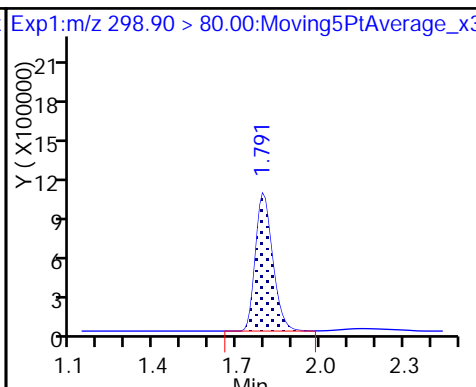
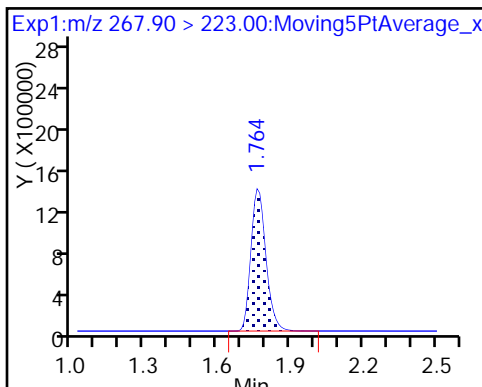
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

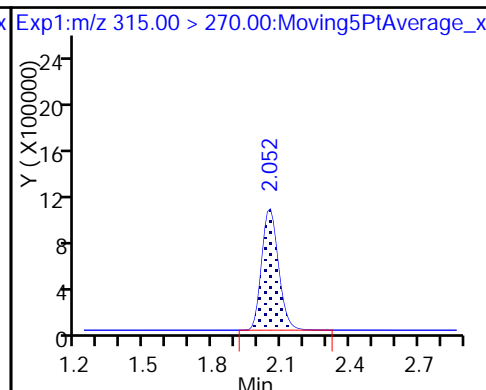
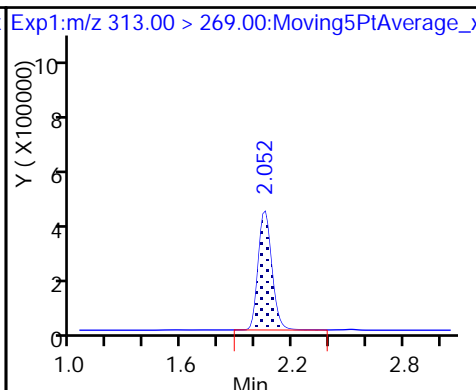
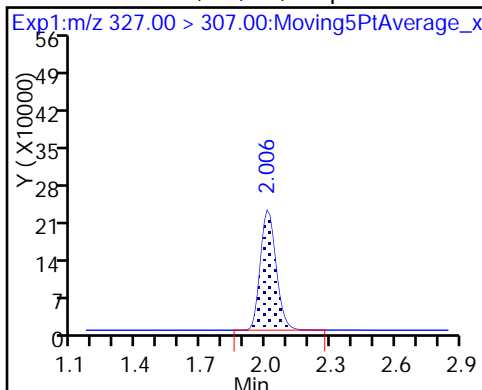
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

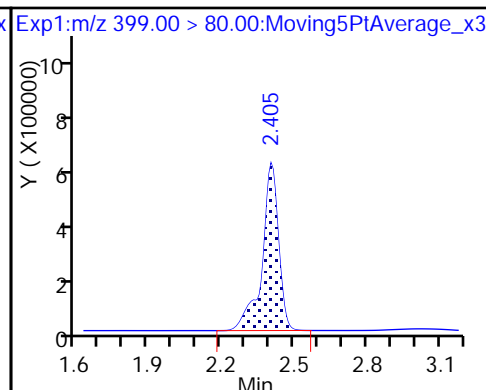
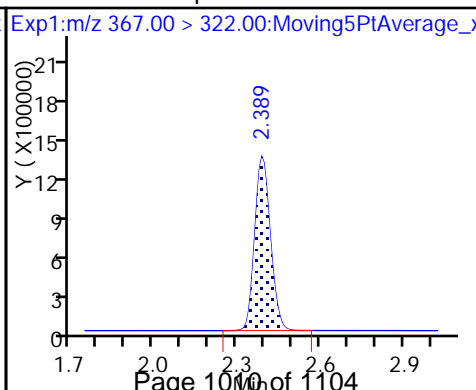
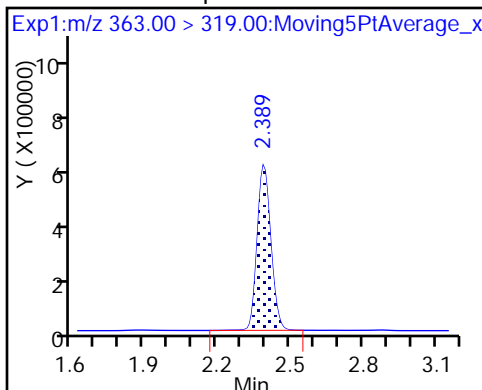
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

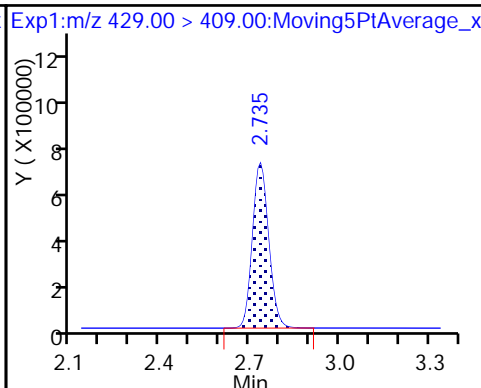
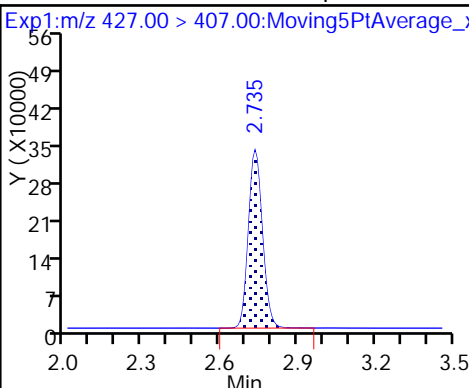
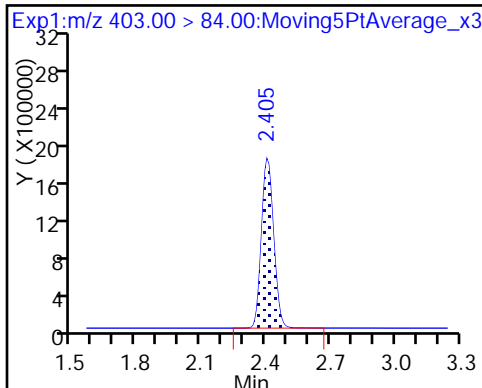
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

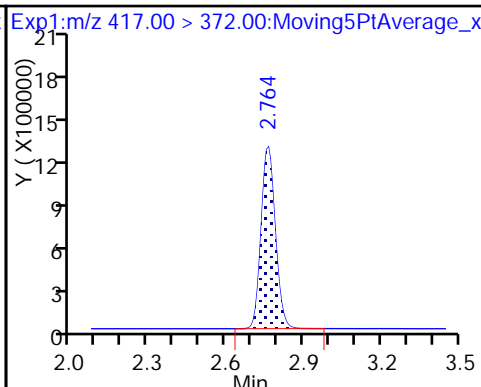
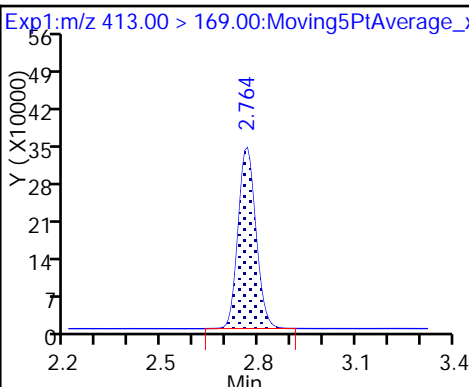
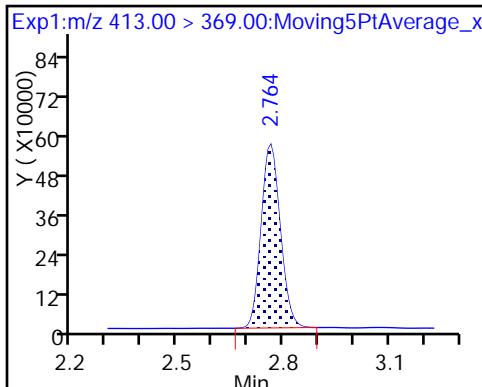
D 12 M2-6:2FTS



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

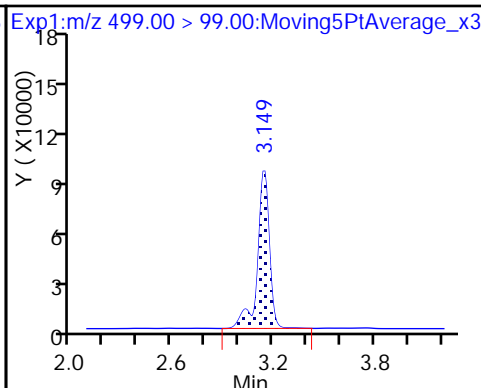
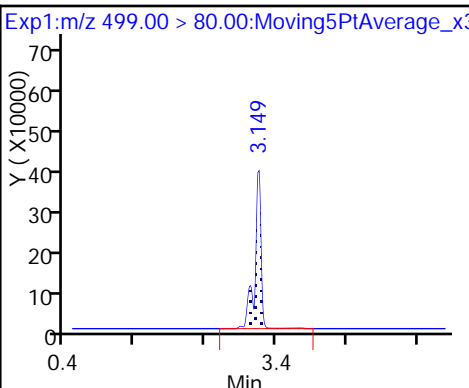
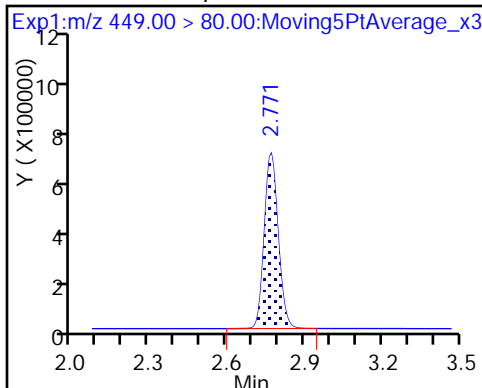
D 14 13C4 PFOA



16 Perfluoroheptanesulfonic Acid

17 Perfluorooctane sulfonic acid

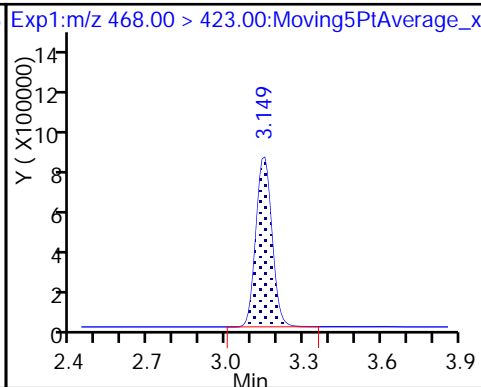
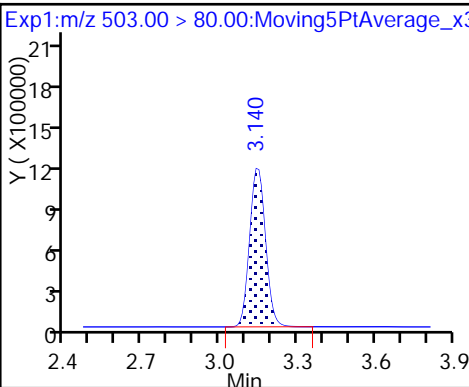
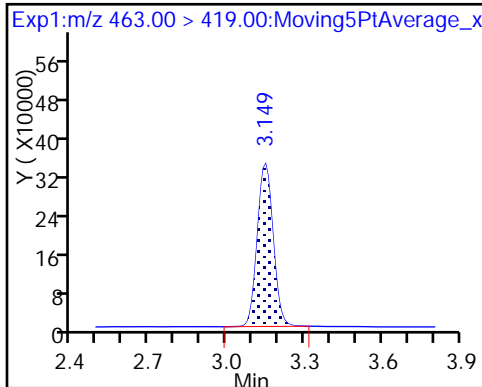
17 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid

D 18 13C4 PFOS

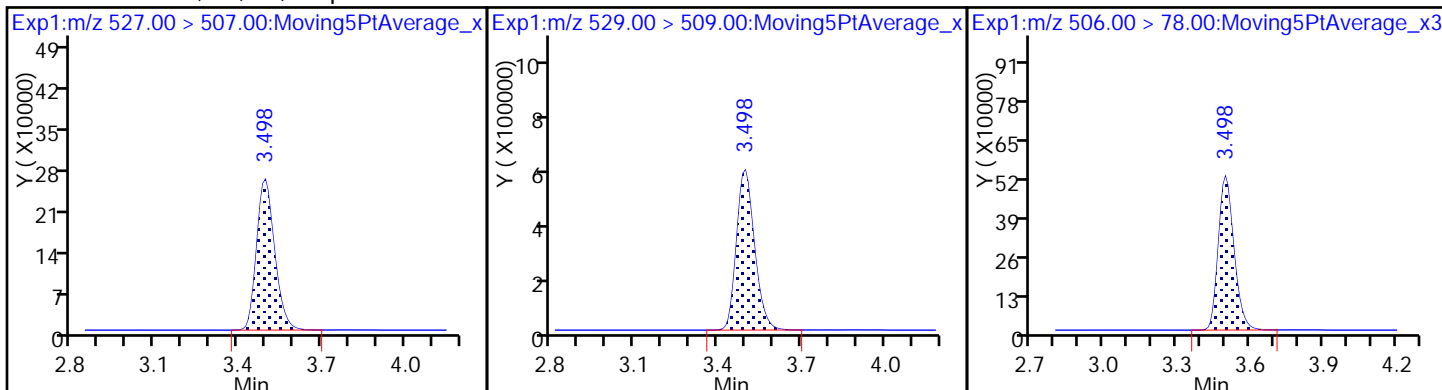
D 19 13C5 PFNA



25 Sodium 1H,1H,2H,2H-perfluorodecanoate

D26 M2-8:2FTS

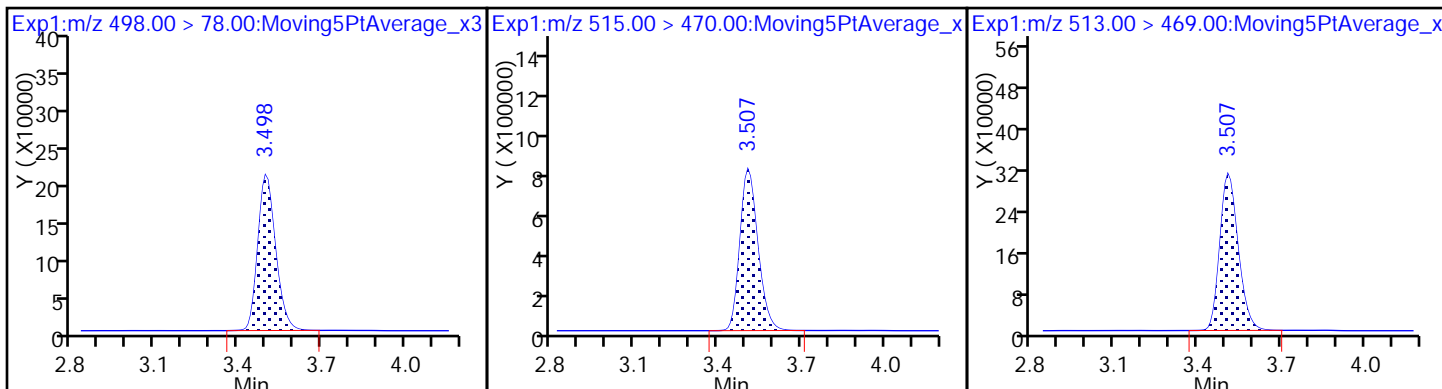
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 23 13C2 PFDA

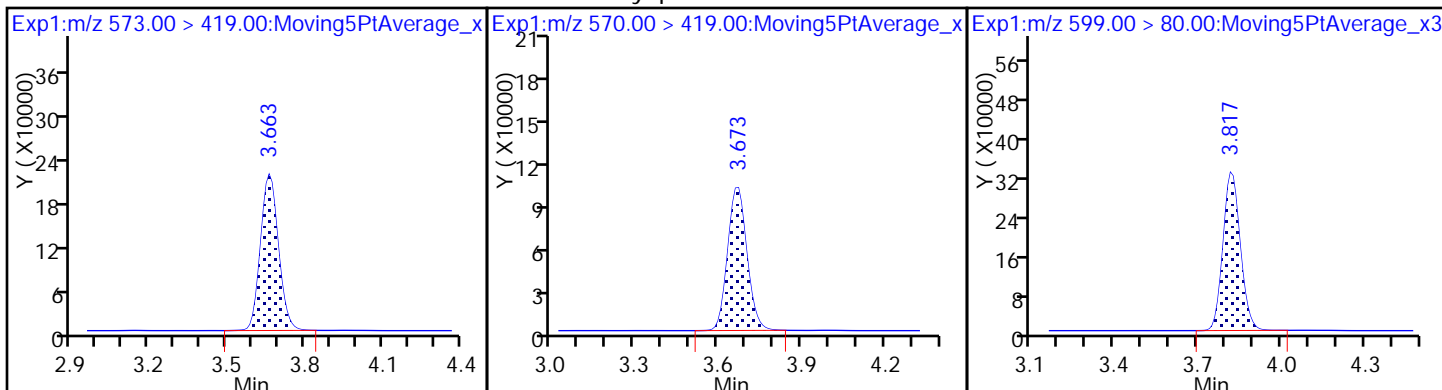
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

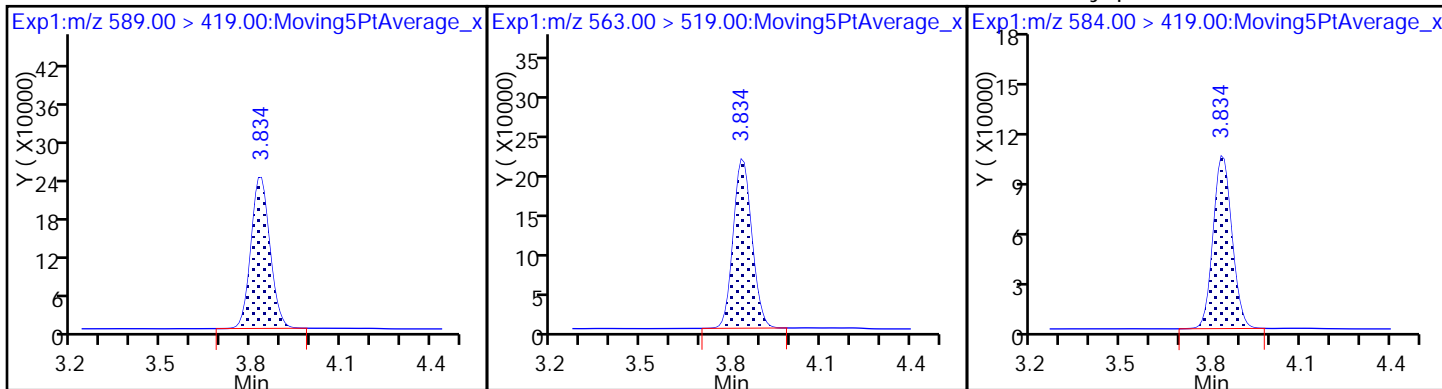
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid

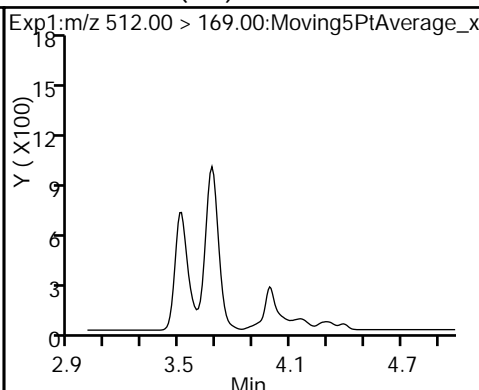
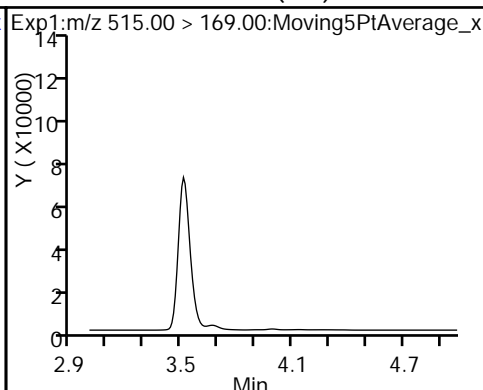
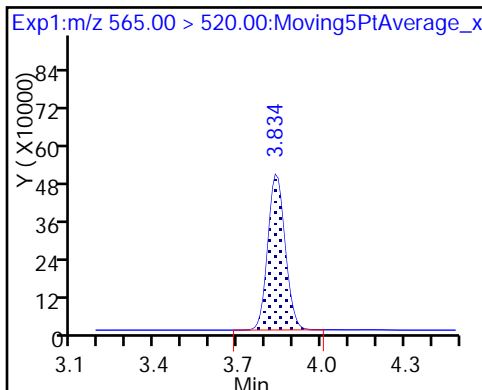
33 N-ethyl perfluorooctane sulfonamid



D 30 13C2 PFUnA

D 34 d-N-MeFOSA-M (ND)

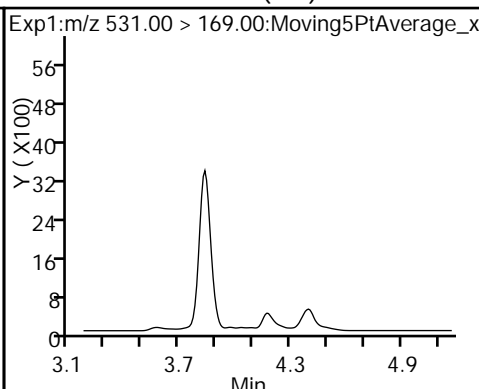
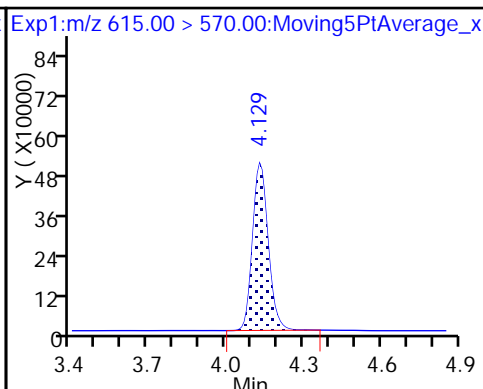
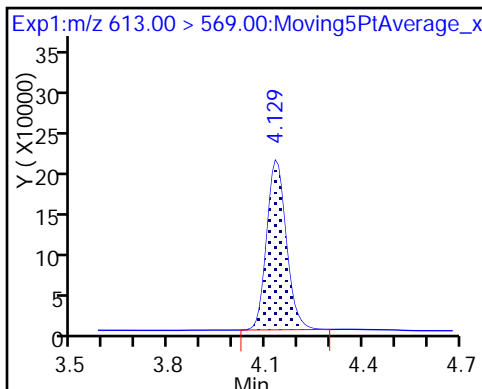
35 MeFOSA (ND)



37 Perfluorododecanoic acid

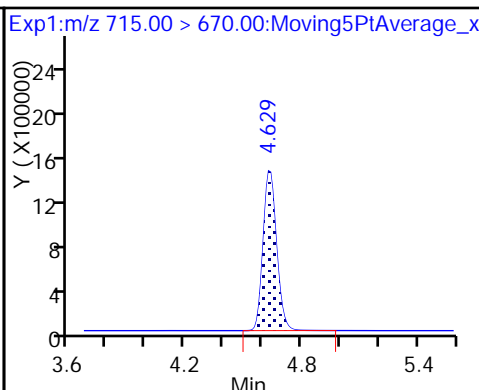
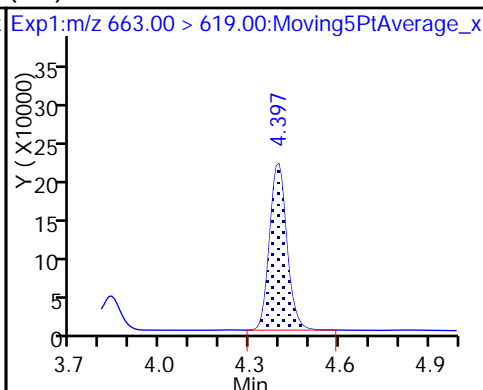
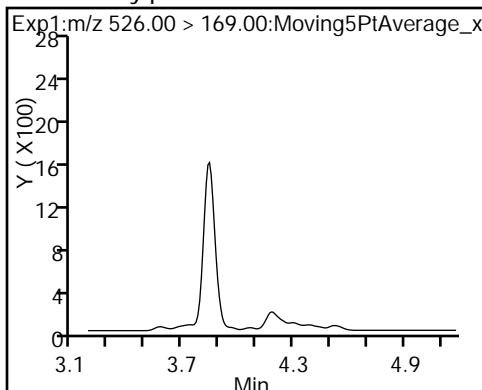
D 36 13C2 PFDa

D 38 d-N-EtFOSA-M (ND)



39 N-ethylperfluoro-1-octanesulfonami (ND) Perfluorotridecanoic acid

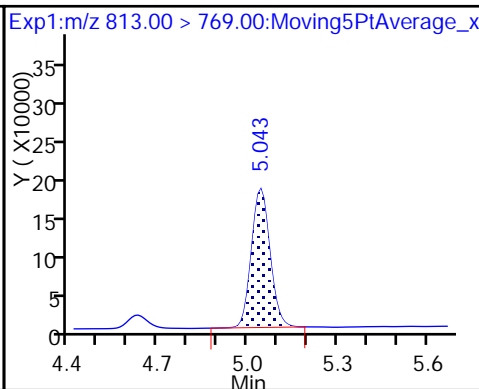
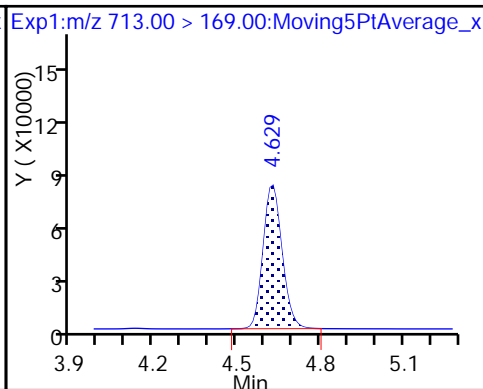
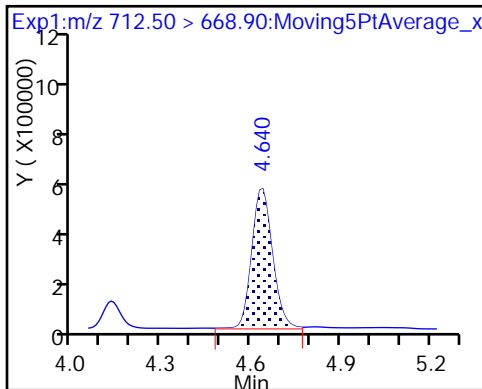
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

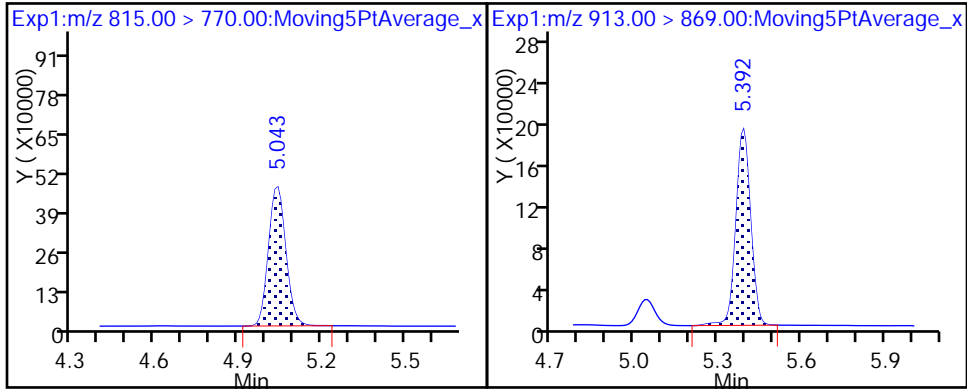
42 Perfluorotetradecanoic acid

45 Perfluorohexadecanoic acid



D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-175742/3-A
 Matrix: Water Lab File ID: 2017.07.27C_004.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/25/2017 09:12
 Sample wt/vol: 250.00 (mL) Date Analyzed: 07/27/2017 21:09
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 176487 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|------------------------------------|--------|---|-----|-----|------|
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 45.0 | | 40 | 2.0 | 0.64 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 55 | | 25-150 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_004.d
 Lims ID: LCSD 320-175742/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 27-Jul-2017 21:09:34 ALS Bottle#: 27 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-175742/3-
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 28-Jul-2017 14:14:10 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: barnettj Date: 28-Jul-2017 13:45:16

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|--------|----------|--------|--------|----------|--------------|---------------|-----------------|------|-------|
| 2 Perfluorobutyric acid | 212.90 | > 169.00 | 1.572 | 1.565 | 0.007 | 1.000 | 3367159 | 22.3 | 111 | 1000 |
| D 1 13C4 PFBA | 217.00 | > 172.00 | 1.572 | 1.565 | 0.007 | | 8571854 | 54.9 | 110 | 20966 |
| 4 Perfluoropentanoic acid | 262.90 | > 219.00 | 1.791 | 1.784 | 0.007 | 1.000 | 2551399 | 19.3 | 96.6 | 1052 |
| D 3 13C5-PFPeA | 267.90 | > 223.00 | 1.791 | 1.784 | 0.007 | | 6336770 | 57.3 | 115 | 37387 |
| D 47 13C3-PFBS | 301.90 | > 83.00 | 1.809 | 1.802 | 0.007 | | 140118 | NC | | 3894 |
| 5 Perfluorobutanesulfonic acid | 298.90 | > 80.00 | 1.819 | 1.812 | 0.007 | 1.000 | 4050632 | 17.3 | 97.7 | 2837 |
| | 298.90 | > 99.00 | 1.819 | 1.812 | 0.007 | 1.000 | 1687588 | 2.40(0.00-0.00) | | 2102 |
| 61 Sodium 1H,1H,2H,2H-perfluorohexane | 327.00 | > 307.00 | 2.028 | 2.020 | 0.008 | 1.000 | 1372201 | 21.0 | 113 | 55086 |
| 6 Perfluorohexanoic acid | 313.00 | > 269.00 | 2.062 | 2.054 | 0.008 | 1.000 | 2450201 | 21.3 | 106 | 3342 |
| D 7 13C2 PFHxA | 315.00 | > 270.00 | 2.062 | 2.054 | 0.008 | | 6042404 | 59.7 | 119 | 20869 |
| 10 Perfluoroheptanoic acid | 363.00 | > 319.00 | 2.399 | 2.385 | 0.014 | 1.000 | 2397948 | 19.8 | 98.8 | 1793 |
| D 9 13C4-PFHpA | 367.00 | > 322.00 | 2.399 | 2.385 | 0.014 | | 5911933 | 70.5 | 141 | 14600 |
| 8 Perfluorohexanesulfonic acid | 399.00 | > 80.00 | 2.415 | 2.401 | 0.014 | 1.000 | 2945465 | 17.3 | 94.9 | 2223 |
| D 11 18O2 PFHxS | 403.00 | > 84.00 | 2.415 | 2.401 | 0.014 | | 7452632 | 54.2 | 115 | 15180 |
| 13 Sodium 1H,1H,2H,2H-perfluorooctane | 427.00 | > 407.00 | 2.734 | 2.711 | 0.023 | 1.000 | 1235116 | 20.5 | 108 | 25429 |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|---------------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| D 12 M2-6:2FTS | | | | | | | | | | |
| 429.00 > 409.00 | 2.734 | 2.711 | 0.023 | | 3191876 | 67.1 | | 141 | 17537 | |
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.755 | 2.740 | 0.015 | 1.000 | 2193157 | 19.1 | | 95.4 | 429 | |
| 413.00 > 169.00 | 2.755 | 2.740 | 0.015 | 1.000 | 1251365 | | 1.75(0.90-1.10) | | 5360 | |
| D 14 13C4 PFOA | | | | | | | | | | |
| 417.00 > 372.00 | 2.755 | 2.740 | 0.015 | | 5389406 | 65.6 | | 131 | 16953 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.763 | 2.747 | 0.016 | 1.000 | 2722833 | 23.4 | | 123 | 15998 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.131 | 3.111 | 0.020 | 1.000 | 1580560 | 19.7 | | 98.3 | 3015 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.131 | 3.111 | 0.020 | 1.000 | 2240191 | 20.4 | | 110 | 5251 | |
| 499.00 > 99.00 | 3.131 | 3.111 | 0.020 | 1.000 | 446933 | | 5.01(0.90-1.10) | | 2619 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.131 | 3.111 | 0.020 | | 3949652 | 60.1 | | 120 | 12001 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.131 | 3.111 | 0.020 | | 4964401 | 45.9 | | 96.0 | 14382 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.478 | 3.454 | 0.024 | 1.000 | 2050339 | 22.5 | | 112 | 11789 | |
| 25 Sodium 1H,1H,2H,2H-perfluorodecane | | | | | | | | | | |
| 527.00 > 507.00 | 3.478 | 3.454 | 0.024 | 1.000 | 1033480 | 20.8 | | 108 | 11796 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.478 | 3.454 | 0.024 | | 5054562 | 27.7 | | 55.3 | 8728 | |
| D 26 M2-8:2FTS | | | | | | | | | | |
| 529.00 > 509.00 | 3.478 | 3.454 | 0.024 | | 2615687 | 71.7 | | 150 | 11819 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.487 | 3.474 | 0.013 | 1.000 | 1583526 | 20.4 | | 102 | 7103 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.487 | 3.474 | 0.013 | | 3962240 | 71.0 | | 142 | 7753 | |
| 28 N-methyl perfluorooctane sulfonami | | | | | | | | | | |
| 570.00 > 419.00 | 3.650 | 3.631 | 0.019 | 1.003 | 470227 | 22.3 | | 112 | 5797 | |
| D 27 d3-NMeFOSAA | | | | | | | | | | |
| 573.00 > 419.00 | 3.640 | 3.631 | 0.009 | | 1156573 | 53.2 | | 106 | 7476 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.806 | 3.777 | 0.029 | 1.000 | 1424870 | 22.0 | | 114 | 7328 | |
| D 32 d5-NEtFOSAA | | | | | | | | | | |
| 589.00 > 419.00 | 3.814 | 3.787 | 0.027 | | 1166128 | 53.2 | | 106 | 2683 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.814 | 3.797 | 0.017 | 1.000 | 953568 | 18.5 | | 92.5 | 1641 | |
| 33 N-ethyl perfluorooctane sulfonamid | | | | | | | | | | |
| 584.00 > 419.00 | 3.814 | 3.797 | 0.017 | 1.000 | 443314 | 22.4 | | 112 | 4226 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.814 | 3.797 | 0.017 | | 2500101 | 61.4 | | 123 | 6649 | |
| D 36 13C2 PFDoA | | | | | | | | | | |
| 615.00 > 570.00 | 4.113 | 4.088 | 0.025 | | 2319046 | 51.9 | | 104 | 3562 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.113 | 4.096 | 0.017 | 1.000 | 869664 | 20.2 | | 101 | 1233 | |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|------|-------|
| 41 Perfluorotridecanoic acid | 663.00 > 619.00 | 4.385 | 4.358 | 0.027 | 1.000 | 981082 | 24.8 | 124 | 217 | |
| 42 Perfluorotetradecanoic acid | 712.50 > 668.90 | 4.623 | 4.593 | 0.030 | 1.000 | 2826328 | 31.7 | 159 | 191 | |
| | 713.00 > 169.00 | 4.612 | 4.593 | 0.019 | 0.998 | 349639 | 8.08(0.00-0.00) | | 2923 | |
| D 43 13C2-PFTeDA | 715.00 > 670.00 | 4.623 | 4.593 | 0.030 | | 6961203 | 85.7 | 171 | 5742 | |
| D 44 13C2-PFHxDA | 815.00 > 770.00 | 5.036 | 5.005 | 0.031 | | 2358292 | 57.1 | 114 | 1617 | |
| 45 Perfluorohexadecanoic acid | 813.00 > 769.00 | 5.036 | 5.015 | 0.021 | 1.000 | 892745 | 23.6 | 118 | 167 | |
| 46 Perfluorooctadecanoic acid | 913.00 > 869.00 | 5.384 | 5.365 | 0.019 | 1.000 | 827661 | 23.3 | 117 | 223 | |

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_004.d

Injection Date: 27-Jul-2017 21:09:34

Instrument ID: A8_N

Lims ID: LCSD 320-175742/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 27

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

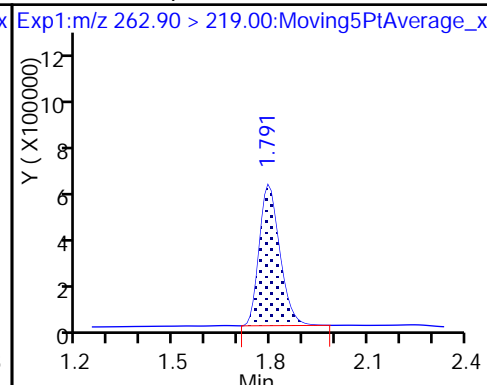
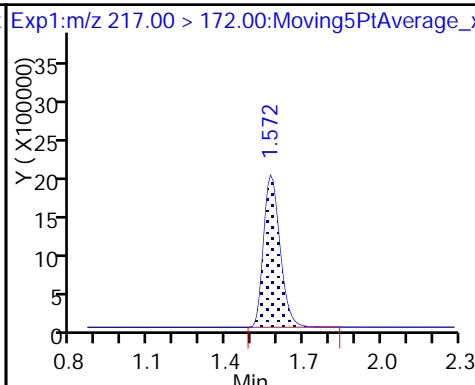
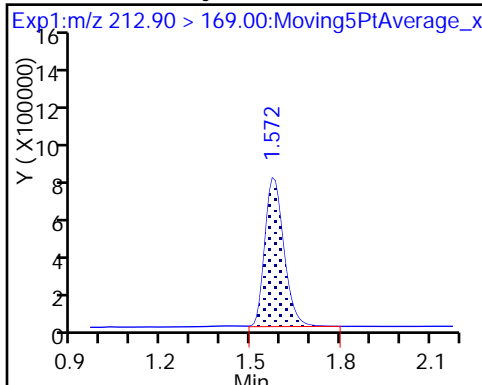
Method: A8_N

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

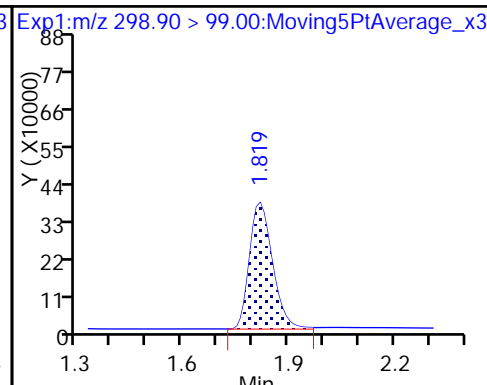
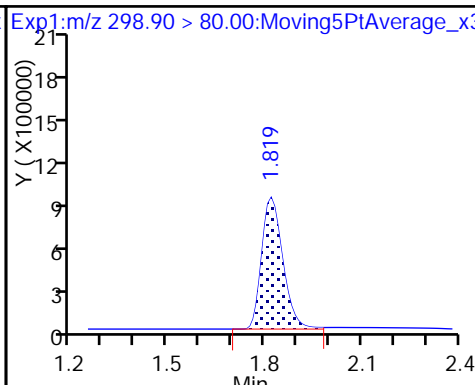
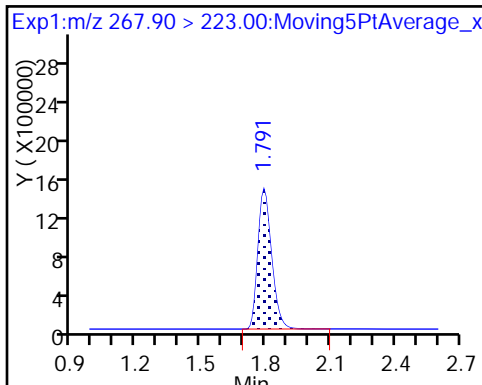
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

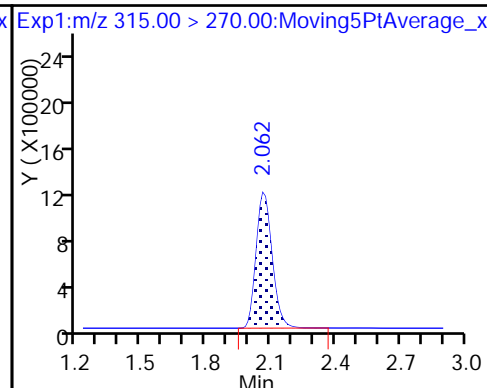
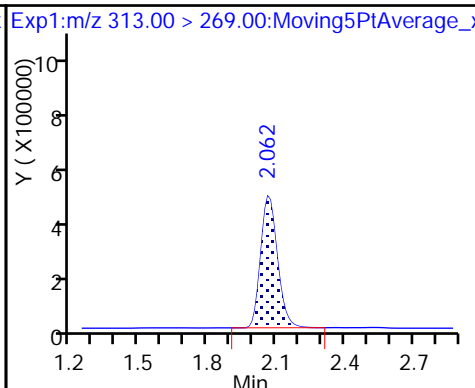
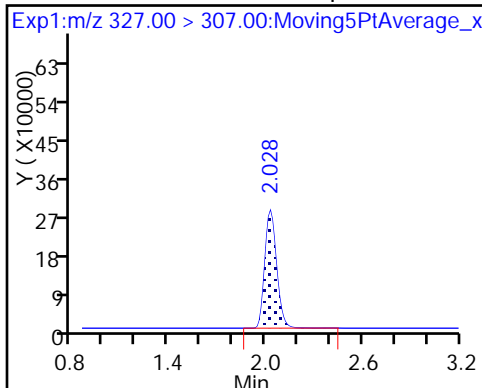
5 Perfluorobutanesulfonic acid

5 Perfluorobutanesulfonic acid



61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

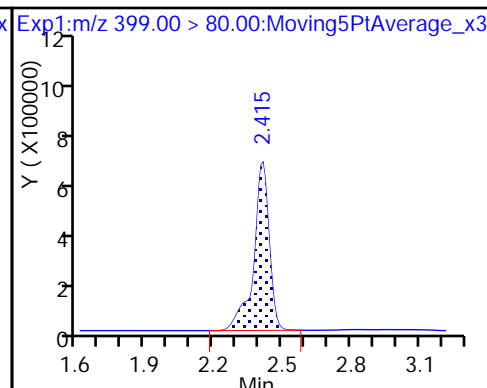
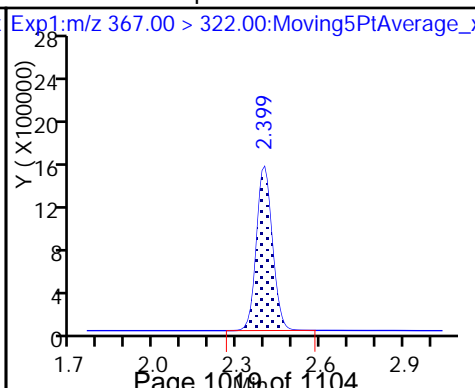
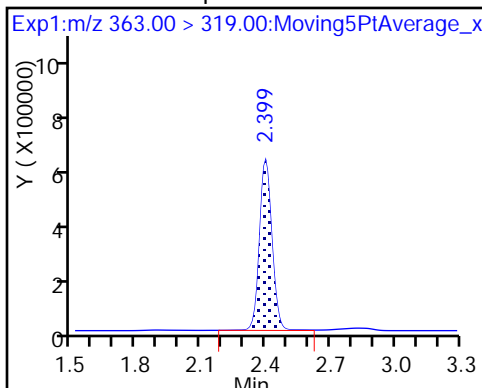
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

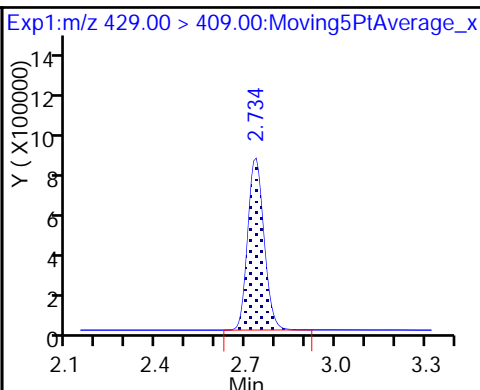
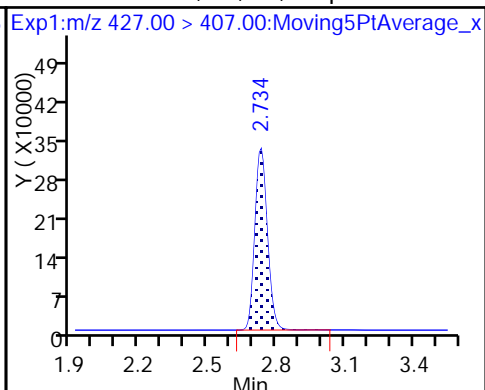
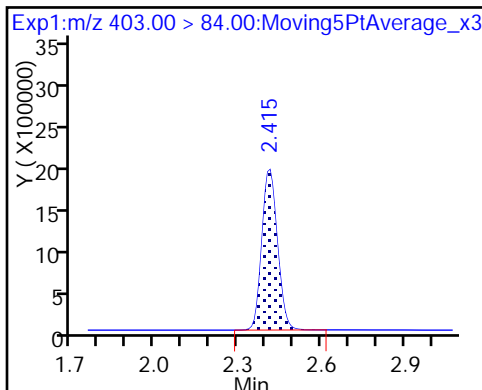
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctadecane

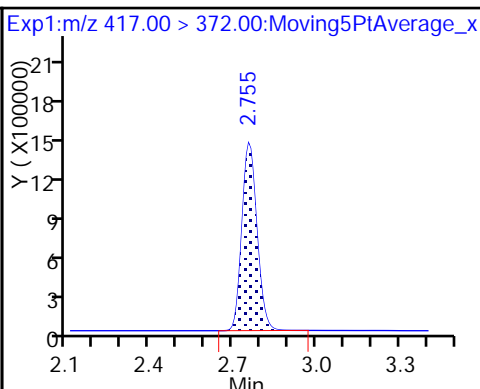
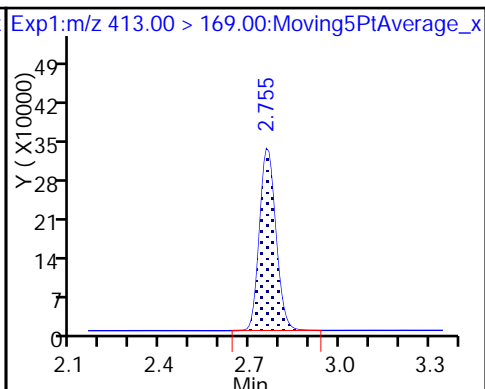
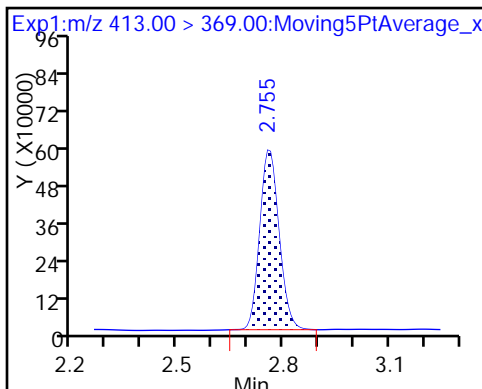
D 12 M2-6:2FTS



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

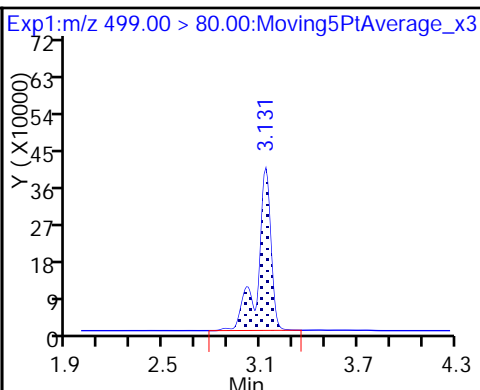
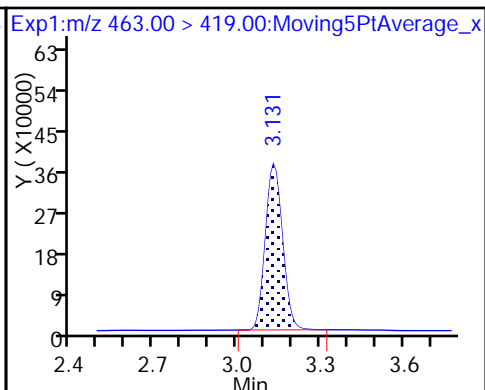
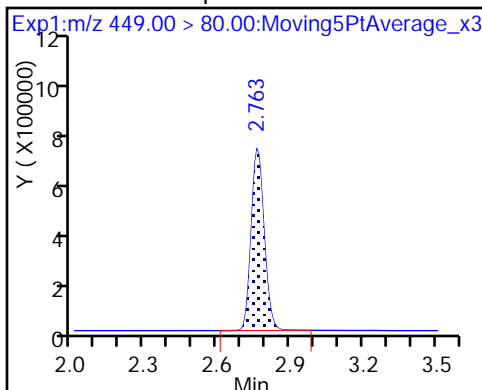
D 14 13C4 PFOA



16 Perfluoroheptanesulfonic Acid

20 Perfluorononanoic acid

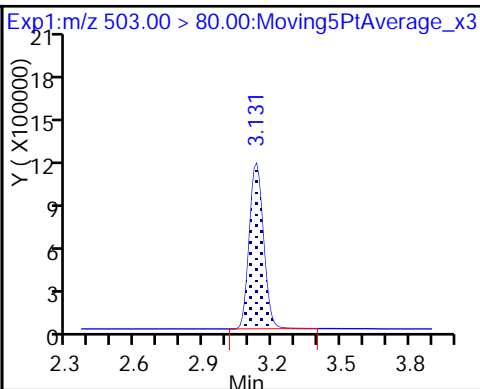
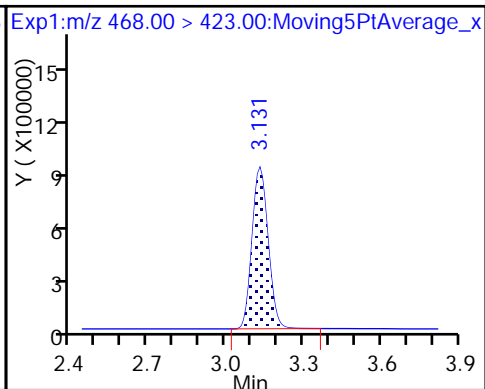
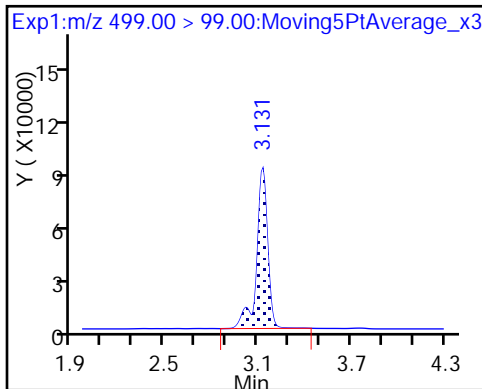
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

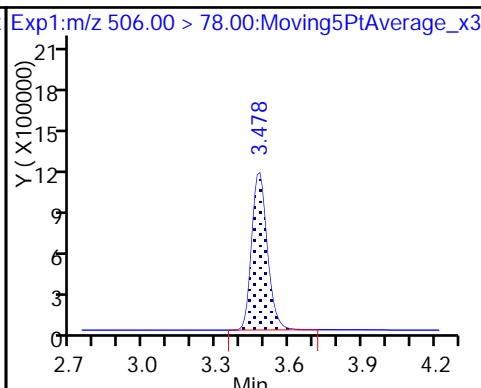
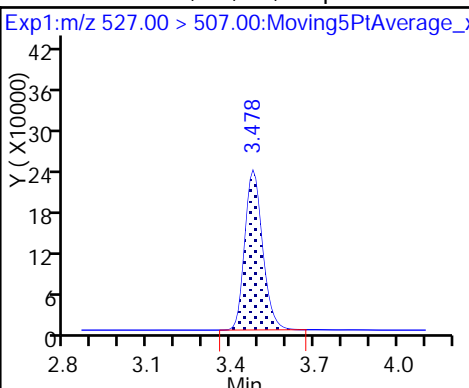
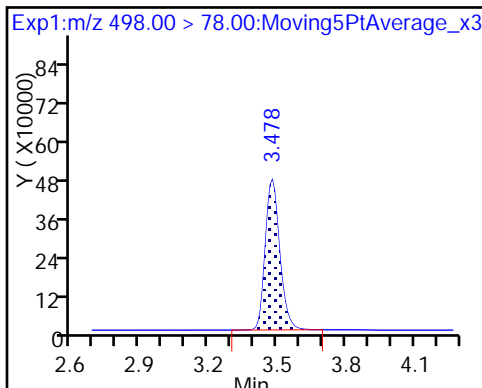
D 18 13C4 PFOS



22 Perfluorooctane Sulfonamide

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

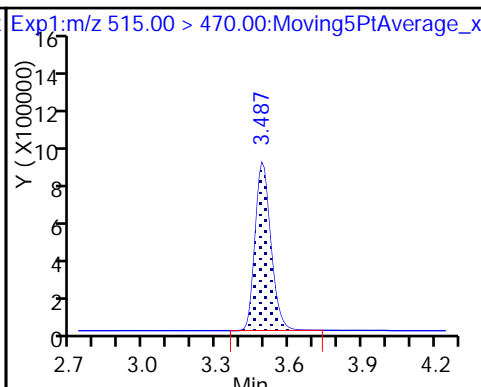
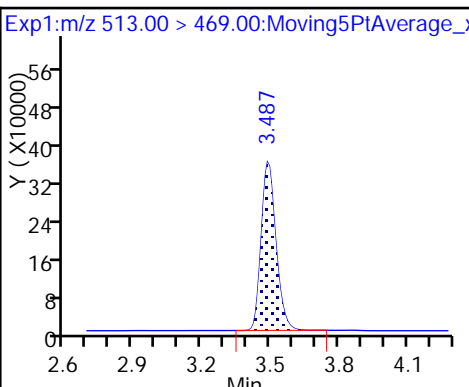
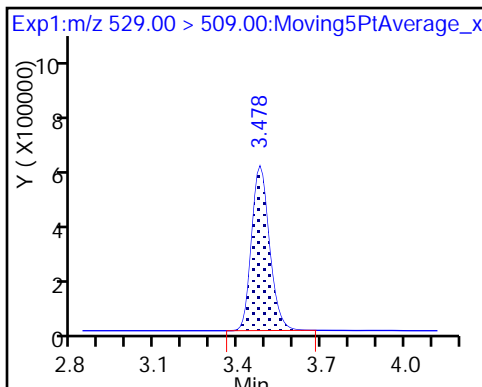
D21 13C8 FOSA



D 26 M2-8:2FTS

24 Perfluorodecanoic acid

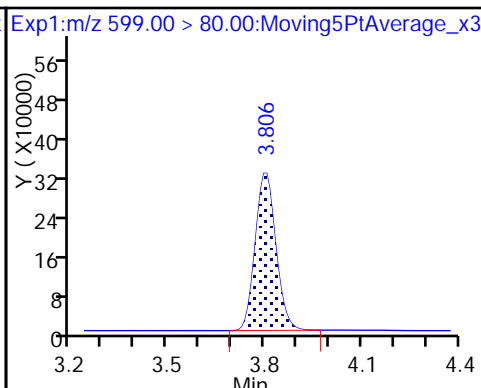
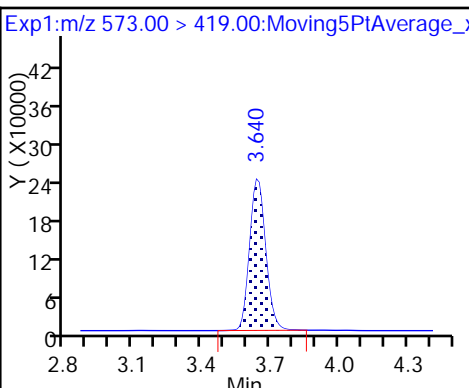
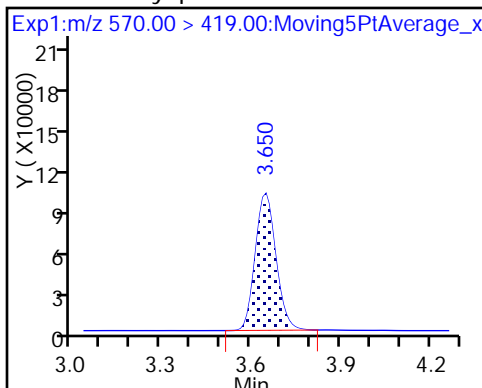
D 23 13C2 PFDA



28 N-methyl perfluorooctane sulfonamide

D 27 d3-NMeFOSAA

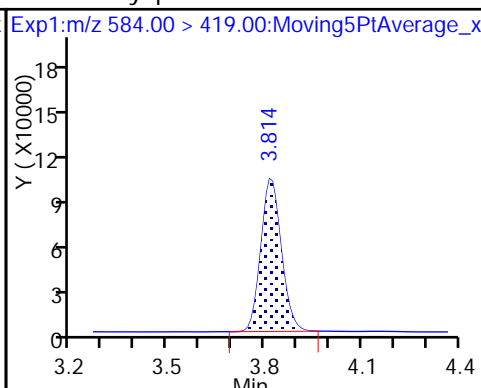
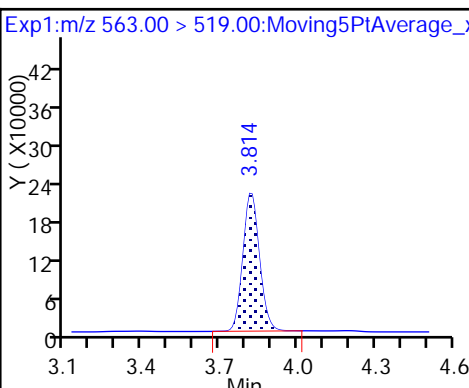
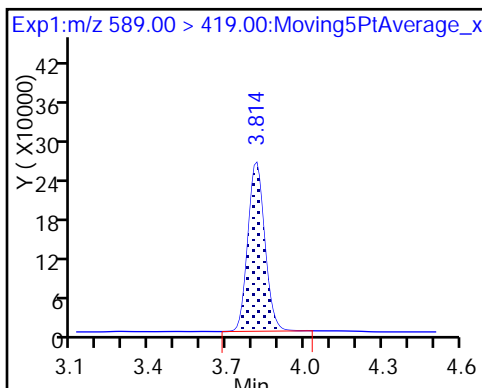
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid

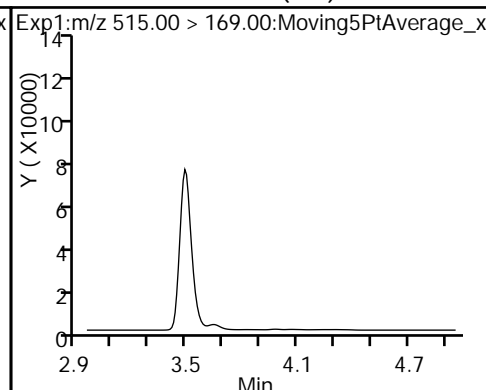
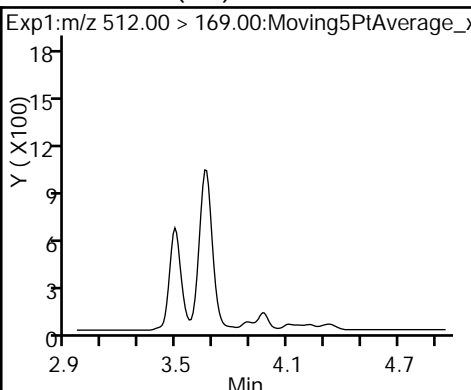
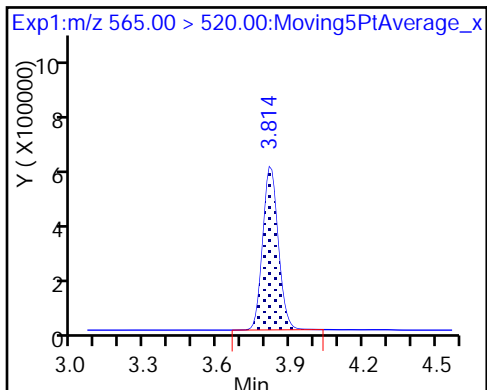
33 N-ethyl perfluorooctane sulfonamide



D 30 13C2 PFUnA

35 MeFOSA (ND)

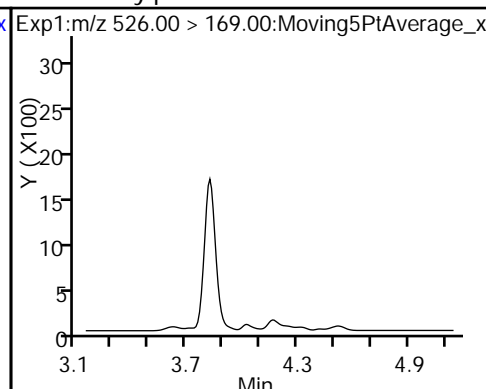
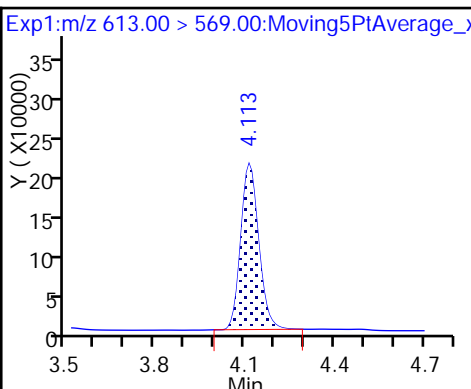
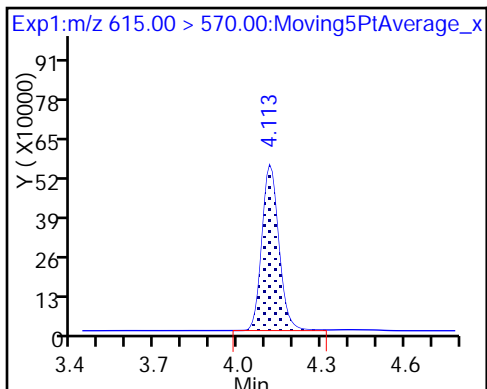
D 34 d-N-MeFOSA-M (ND)



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

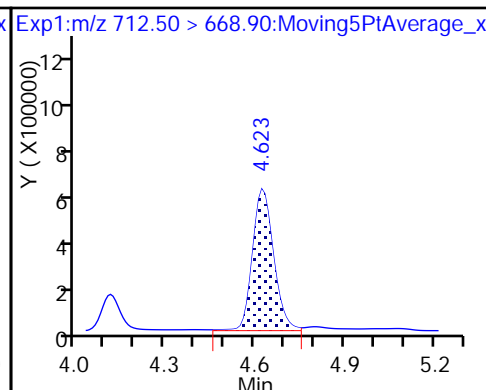
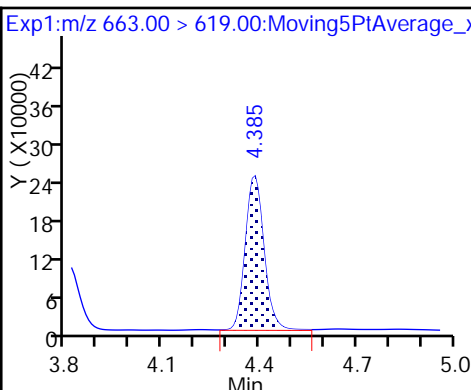
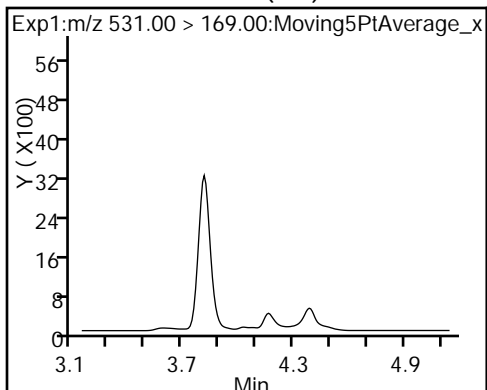
39 N-ethylperfluoro-1-octanesulfonami (ND)



D 38 d-N-EtFOSA-M (ND)

41 Perfluorotridecanoic acid

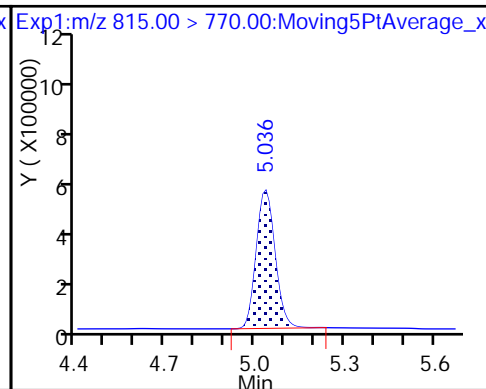
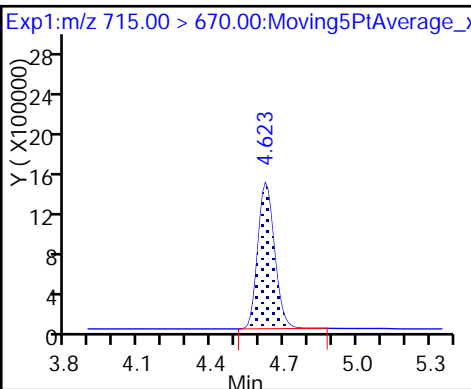
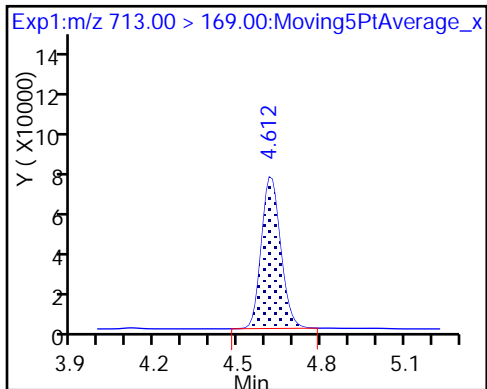
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

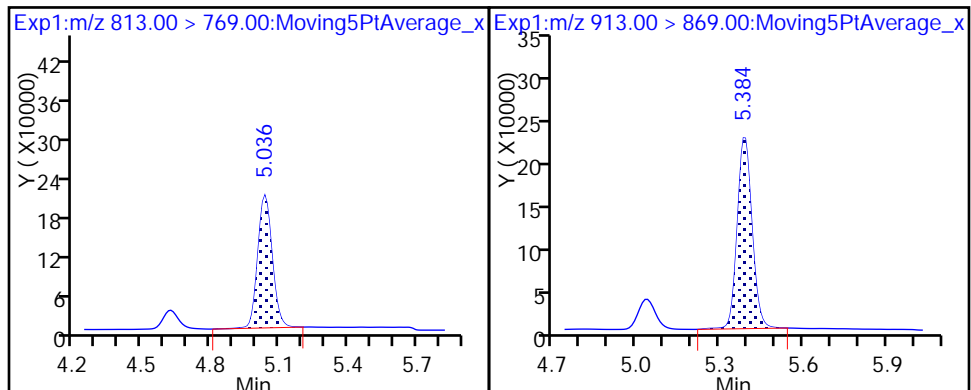
D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/20/2017 17:08

Analysis Batch Number: 175252 End Date: 07/20/2017 18:18

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|----------------------|-----------------------|
| ZZZZZ | | 07/20/2017 17:08 | 1 | | GeminiC18 3x100 3(mm) |
| IC 320-175252/3 | | 07/20/2017 17:15 | 1 | 2017.07.20ICAL_003.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/4 | | 07/20/2017 17:22 | 1 | 2017.07.20ICAL_004.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/5 | | 07/20/2017 17:29 | 1 | 2017.07.20ICAL_005.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/6 | | 07/20/2017 17:36 | 1 | 2017.07.20ICAL_006.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/7 | | 07/20/2017 17:43 | 1 | 2017.07.20ICAL_007.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/8 | | 07/20/2017 17:50 | 1 | 2017.07.20ICAL_008.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/9 | | 07/20/2017 17:57 | 1 | 2017.07.20ICAL_009.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/10 | | 07/20/2017 18:04 | 1 | 2017.07.20ICAL_010.d | GeminiC18 3x100 3(mm) |
| ICB 320-175252/11 | | 07/20/2017 18:11 | 1 | | GeminiC18 3x100 3(mm) |
| ICV 320-175252/12 | | 07/20/2017 18:18 | 1 | 2017.07.20ICAL_012.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/21/2017 11:54

Analysis Batch Number: 175391 End Date: 07/21/2017 12:28

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|-------------------|-----------------------|
| CCVL 320-175391/2 | | 07/21/2017 11:54 | 1 | 2017.07.21A_005.d | GeminiC18 3x100 3(mm) |
| CCV 320-175391/3 | | 07/21/2017 12:00 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 12:07 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 12:14 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 12:21 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175391/7 | | 07/21/2017 12:28 | 1 | | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/21/2017 20:38

Analysis Batch Number: 175462 End Date: 07/21/2017 23:44

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---------------------|------------------|------------------|-----------------|-----------------------|-----------------------|
| CCV 320-175462/1 | | 07/21/2017 20:38 | 1 | 2017.07.21C_015 .d | GeminiC18 3x100 3(mm) |
| MB 320-174599/1-A | | 07/21/2017 20:45 | 1 | 2017.07.21C_016 .d | GeminiC18 3x100 3(mm) |
| LCS 320-174599/2-A | | 07/21/2017 20:52 | 1 | 2017.07.21C_017 .d | GeminiC18 3x100 3(mm) |
| LCSD 320-174599/3-A | | 07/21/2017 20:59 | 1 | 2017.07.21C_018 .d | GeminiC18 3x100 3(mm) |
| 320-29732-4 | | 07/21/2017 21:06 | 1 | 2017.07.21C_019 .d | GeminiC18 3x100 3(mm) |
| CCV 320-175462/9 | | 07/21/2017 21:33 | 1 | 2017.07.21C_023 .d | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 21:47 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 21:54 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 22:01 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 22:08 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 22:15 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 22:42 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175462/20 | | 07/21/2017 22:49 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 22:56 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175462/22 | | 07/21/2017 23:03 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 23:10 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 23:17 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 23:24 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 23:31 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 23:37 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175462/28 | | 07/21/2017 23:44 | 1 | | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/23/2017 13:10

Analysis Batch Number: 175476 End Date: 07/23/2017 14:12

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|----------------------|-----------------------|
| IC 320-175476/3 | | 07/23/2017 13:10 | 1 | 2017.07.23ICAL_003.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/4 | | 07/23/2017 13:17 | 1 | 2017.07.23ICAL_004.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/5 | | 07/23/2017 13:23 | 1 | 2017.07.23ICAL_005.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/6 | | 07/23/2017 13:30 | 1 | 2017.07.23ICAL_006.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/7 | | 07/23/2017 13:37 | 1 | 2017.07.23ICAL_007.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/8 | | 07/23/2017 13:44 | 1 | 2017.07.23ICAL_008.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/9 | | 07/23/2017 13:51 | 1 | 2017.07.23ICAL_009.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/10 | | 07/23/2017 13:58 | 1 | 2017.07.23ICAL_010.d | GeminiC18 3x100 3(mm) |
| ICB 320-175476/11 | | 07/23/2017 14:05 | 1 | | GeminiC18 3x100 3(mm) |
| ICV 320-175476/12 | | 07/23/2017 14:12 | 1 | 2017.07.23ICAL_012.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/23/2017 14:32

Analysis Batch Number: 175528 End Date: 07/23/2017 17:18

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---------------------|------------------|------------------|-----------------|-------------------|-----------------------|
| CCV 320-175528/1 | | 07/23/2017 14:32 | 1 | 2017.07.23A_001.d | GeminiC18 3x100 3(mm) |
| MB 320-175097/1-A | | 07/23/2017 14:39 | 1 | 2017.07.23A_002.d | GeminiC18 3x100 3(mm) |
| LCS 320-175097/2-A | | 07/23/2017 14:46 | 1 | 2017.07.23A_003.d | GeminiC18 3x100 3(mm) |
| LCSD 320-175097/3-A | | 07/23/2017 14:53 | 1 | 2017.07.23A_004.d | GeminiC18 3x100 3(mm) |
| CCV 320-175528/12 | | 07/23/2017 15:48 | 1 | 2017.07.23A_012.d | GeminiC18 3x100 3(mm) |
| 320-29732-1 | | 07/23/2017 16:16 | 1 | 2017.07.23A_016.d | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/23/2017 16:23 | 1 | | GeminiC18 3x100 3(mm) |
| 320-29732-3 | | 07/23/2017 16:30 | 1 | 2017.07.23A_018.d | GeminiC18 3x100 3(mm) |
| CCV 320-175528/21 | | 07/23/2017 16:50 | 1 | 2017.07.23A_021.d | GeminiC18 3x100 3(mm) |
| CCV 320-175528/25 | | 07/23/2017 17:18 | 1 | | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/24/2017 11:42

Analysis Batch Number: 175631 End Date: 07/24/2017 12:23

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|-----------------------|-----------------------|
| CCVL 320-175631/2 | | 07/24/2017 11:42 | 1 | 2017.07.24A_004 .d | GeminiC18 3x100 3(mm) |
| CCV 320-175631/3 | | 07/24/2017 11:49 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/24/2017 11:56 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/24/2017 12:02 | 5 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/24/2017 12:09 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/24/2017 12:16 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175631/8 | | 07/24/2017 12:23 | 1 | | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/24/2017 20:00

Analysis Batch Number: 175757 End Date: 07/24/2017 20:21

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|------------------|------------------|------------------|-----------------|------------------------|-----------------------|
| CCV 320-175757/1 | | 07/24/2017 20:00 | 1 | 2017.07.24AA_02 8.d | GeminiC18 3x100 3(mm) |
| 320-29732-1 DL | | 07/24/2017 20:07 | 10 | 2017.07.24AA_02 9.d | GeminiC18 3x100 3(mm) |
| 320-29732-2 | | 07/24/2017 20:14 | 1 | 2017.07.24AA_03 0.d | GeminiC18 3x100 3(mm) |
| CCV 320-175757/4 | | 07/24/2017 20:21 | 1 | 2017.07.24AA_03 1.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/25/2017 09:27

Analysis Batch Number: 175762 End Date: 07/25/2017 10:02

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|-----------------------|-----------------------|
| CCVL 320-175762/3 | | 07/25/2017 09:27 | 1 | 2017.07.25A_003 .d | GeminiC18 3x100 3(mm) |
| CCV 320-175762/4 | | 07/25/2017 09:34 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/25/2017 09:41 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/25/2017 09:48 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/25/2017 09:55 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175762/8 | | 07/25/2017 10:02 | 1 | | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/25/2017 14:10

Analysis Batch Number: 175951 End Date: 07/25/2017 17:10

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---------------------|------------------|------------------|-----------------|-------------------|-----------------------|
| CCV 320-175951/1 | | 07/25/2017 14:10 | 1 | 2017.07.25B_001.d | GeminiC18 3x100 3(mm) |
| MB 320-175074/1-A | | 07/25/2017 14:17 | 1 | 2017.07.25B_002.d | GeminiC18 3x100 3(mm) |
| LCS 320-175074/2-A | | 07/25/2017 14:24 | 1 | 2017.07.25B_003.d | GeminiC18 3x100 3(mm) |
| LCSD 320-175074/3-A | | 07/25/2017 14:31 | 1 | 2017.07.25B_004.d | GeminiC18 3x100 3(mm) |
| 320-29732-1 RE | | 07/25/2017 15:05 | 1 | 2017.07.25B_009.d | GeminiC18 3x100 3(mm) |
| 320-29732-2 RE | | 07/25/2017 15:12 | 1 | 2017.07.25B_010.d | GeminiC18 3x100 3(mm) |
| 320-29732-3 RE | | 07/25/2017 15:19 | 1 | 2017.07.25B_011.d | GeminiC18 3x100 3(mm) |
| CCV 320-175951/12 | | 07/25/2017 15:26 | 1 | 2017.07.25B_012.d | GeminiC18 3x100 3(mm) |
| CCV 320-175951/23 | | 07/25/2017 16:42 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175951/27 | | 07/25/2017 17:10 | 1 | | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/27/2017 12:19

Analysis Batch Number: 176352 End Date: 07/27/2017 13:28

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|-----------------------|-----------------------|
| CCVL 320-176352/3 | | 07/27/2017 12:19 | 1 | 2017.07.27A_004 .d | GeminiC18 3x100 3(mm) |
| CCV 320-176352/4 | | 07/27/2017 12:26 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 12:33 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 12:40 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 12:47 | 10 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 12:54 | 10 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 13:01 | 10 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 13:08 | 10 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 13:14 | 20 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 13:21 | 10 | | GeminiC18 3x100 3(mm) |
| CCV 320-176352/13 | | 07/27/2017 13:28 | 1 | | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/27/2017 20:48

Analysis Batch Number: 176487 End Date: 07/27/2017 22:25

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---------------------|------------------|------------------|-----------------|-------------------|-----------------------|
| CCV 320-176487/1 | | 07/27/2017 20:48 | 1 | 2017.07.27C_001.d | GeminiC18 3x100 3(mm) |
| MB 320-175742/1-A | | 07/27/2017 20:55 | 1 | 2017.07.27C_002.d | GeminiC18 3x100 3(mm) |
| LCS 320-175742/2-A | | 07/27/2017 21:02 | 1 | 2017.07.27C_003.d | GeminiC18 3x100 3(mm) |
| LCSD 320-175742/3-A | | 07/27/2017 21:09 | 1 | 2017.07.27C_004.d | GeminiC18 3x100 3(mm) |
| CCV 320-176487/12 | | 07/27/2017 22:04 | 1 | 2017.07.27C_012.d | GeminiC18 3x100 3(mm) |
| 320-29732-4 RE | | 07/27/2017 22:18 | 1 | 2017.07.27C_014.d | GeminiC18 3x100 3(mm) |
| CCV 320-176487/15 | | 07/27/2017 22:25 | 1 | 2017.07.27C_015.d | GeminiC18 3x100 3(mm) |

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 174599 Batch Start Date: 07/18/17 07:22 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/20/17 21:40

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | LCMPFCSU 00081 | LCPFCSU 00100 |
|----------------------|------------------|-------------------------|-------|-------------|------------|---------------|-------------|----------------|---------------|
| MB 320-174599/1 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | |
| LCS 320-174599/2 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | 500 uL |
| LCSD 320-174599/3 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-A-4 | TP-PFC-019-TPE-D | 3535, 537 (Modified) | T | 285.36 g | 26.98 g | 258.4 mL | 0.50 mL | 500 uL | |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | AnalysisComment | | | | | |
|----------------------|------------------|-------------------------|-------|---------------------------------|--|--|--|--|--|
| MB 320-174599/1 | | 3535, 537 (Modified) | | Time off the N-evap: 7:48 pm | | | | | |
| LCS 320-174599/2 | | 3535, 537 (Modified) | | Time off the N-evap: 7:30 pm | | | | | |
| LCSD 320-174599/3 | | 3535, 537 (Modified) | | Time off the N-evap: 7:15 pm | | | | | |
| 320-29732-A-4 | TP-PFC-019-TPE-D | 3535, 537 (Modified) | T | Time off the N-evap: 7:00 pm | | | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 174599 Batch Start Date: 07/18/17 07:22 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/20/17 21:40

| Batch Notes | |
|--------------------------------------|-----------------|
| Balance ID | QA-070 |
| H2O ID | 7/17/17 |
| Hexane ID | 958899 |
| Manifold ID | 12,13 |
| Methanol ID | 973171 |
| Sodium Hydroxide ID | 966118 |
| Pipette ID | N32728F |
| Analyst ID - Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop Witness | NSH |
| Solvent Lot # | 976948 |
| Solvent Name | 0.3% NH4OH/MeOH |
| SOP Number | WS-LC-0025 |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003036333A |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 175074 Batch Start Date: 07/20/17 09:14 Batch Analyst: Santos, Jonathan

Batch Method: 3535 Batch End Date: 07/24/17 22:05

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | LCMPFCSU 00081 | LCPFCSU 00100 |
|----------------------|---------------------------|-------------------------|-------|-------------|------------|---------------|-------------|----------------|---------------|
| MB 320-175074/1 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | |
| LCS 320-175074/2 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | 500 uL |
| LCSD 320-175074/3 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-A-1 | TP-PFC-019-TPI | 3535, 537 (Modified) | T | 284.68 g | 26.67 g | 258 mL | 0.50 mL | 500 uL | |
| 320-29732-A-2 | TP-PFC-019-MID-C ARBON | 3535, 537 (Modified) | T | 279.04 g | 27.01 g | 252 mL | 0.50 mL | 500 uL | |
| 320-29732-A-3 | TP-PFC-019-TPE | 3535, 537 (Modified) | T | 281.97 g | 27.36 g | 254.6 mL | 0.50 mL | 500 uL | |

| Batch Notes | |
|--------------------------------------|-----------------|
| Balance ID | QA-070 |
| H2O ID | 7/17/17 |
| Hexane ID | 958901 |
| Manifold ID | 2, 8 |
| Methanol ID | 983105 |
| Sodium Hydroxide ID | 988541 |
| Pipette ID | N32728F |
| Analyst ID - Reagent Drop | HJA |
| Analyst ID - SU Reagent Drop | HJA |
| Analyst ID - SU Reagent Drop Witness | JNS |
| Solvent Lot # | 987338 |
| Solvent Name | 0.3% NH4OH/MeOH |
| SOP Number | WS-LC-0025 |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003036333A |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 175097 Batch Start Date: 07/20/17 10:13 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/22/17 12:30

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | LCMPFC2SU 00025 | LCMPFCSU 00081 |
|----------------------|---------------------------|-------------------------|-------|-------------|------------|---------------|-------------|-----------------|----------------|
| MB 320-175097/1 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | 500 uL |
| LCS 320-175097/2 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | 500 uL |
| LCSD 320-175097/3 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-C-1 | TP-PFC-019-TPI | 3535, 537 (Modified) | T | 283.61 g | 27.32 g | 256.3 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-C-2 | TP-PFC-019-MID-C ARBON | 3535, 537 (Modified) | T | 278.12 g | 27.30 g | 250.8 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-C-3 | TP-PFC-019-TPE | 3535, 537 (Modified) | T | 286.52 g | 26.98 g | 259.5 mL | 0.50 mL | 500 uL | 500 uL |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LCPFC2SP 00032 | LCPFCSP 00100 | AnalysisComment | | | |
|----------------------|---------------------------|-------------------------|-------|----------------|---------------|------------------------------------|--|--|--|
| MB 320-175097/1 | | 3535, 537 (Modified) | | | | | | | |
| LCS 320-175097/2 | | 3535, 537 (Modified) | | 500 uL | 500 uL | | | | |
| LCSD 320-175097/3 | | 3535, 537 (Modified) | | 500 uL | 500 uL | | | | |
| 320-29732-C-1 | TP-PFC-019-TPI | 3535, 537 (Modified) | T | | | | | | |
| 320-29732-C-2 | TP-PFC-019-MID-C ARBON | 3535, 537 (Modified) | T | | | Milky white samples after FV | | | |
| 320-29732-C-3 | TP-PFC-019-TPE | 3535, 537 (Modified) | T | | | Milky white samples after FV | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 175097 Batch Start Date: 07/20/17 10:13 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/22/17 12:30

| Batch Notes | |
|--------------------------------------|-----------------|
| Balance ID | QA-070 |
| H2O ID | 7/17/17 |
| Hexane ID | 981623 |
| Manifold ID | 13,14 |
| Methanol ID | 983105 |
| Sodium Hydroxide ID | 988541 |
| Pipette ID | N32728F |
| Analyst ID - Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop Witness | NSH |
| Solvent Lot # | 987338 |
| Solvent Name | 0.3% NH4OH/MeOH |
| SOP Number | WS-LC-0025 |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003036333A |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 175742 Batch Start Date: 07/25/17 09:11 Batch Analyst: Santos, Jonathan

Batch Method: 3535 Batch End Date: 07/27/17 14:07

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | LCMPFC_ALL_SU 00004 | LCPFCSF 00110 |
|----------------------|------------------|-------------------------|-------|-------------|------------|---------------|-------------|------------------------|---------------|
| MB 320-175742/1 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | |
| LCS 320-175742/2 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | 500 uL |
| LCSD 320-175742/3 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-C-4 | TP-PFC-019-TPE-D | 3535, 537 (Modified) | T | 272.84 g | 27.30 g | 245.5 mL | 0.50 mL | 500 uL | |

| Batch Notes | |
|--------------------------------------|-----------------|
| Balance ID | QA-070 |
| H2O ID | 7/21/17 |
| Hexane ID | 981625 |
| Manifold ID | 2, 8 |
| Methanol ID | 988835 |
| Sodium Hydroxide ID | 988541 |
| Pipette ID | MD05306 |
| Analyst ID - Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop Witness | JNS |
| Solvent Lot # | 987338 |
| Solvent Name | 0.3% NH4OH/MeOH |
| SOP Number | WS-LC-0025 |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003237040A |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Job Number(s): 29816; 160-23181
29732; 29409; 29517; 29713; Work List ID(s): 45761; 45829; 45827
 Extraction Batch: 174599; ^{SBC 7/25/17} 175097; 173307 Analysis Batch(es): 175746(A); 175747
174105; 175462; 175463; 175752;
 Delivery Rank 4 Due Date: various

| A. Calibration/Instrument Run QC | 1 st Level | 2 nd Level | N/A |
|--|-----------------------|-----------------------|-----|
| 1. ICAL locked in Chrom and TALS? ICAL Batch# <u>175252; 175253; 175477</u> | ✓ | ✓ | |
| 2. ICAL, CCV Frequency & Criteria met. | ✓ | ✓ | |
| • RF _{average} criteria appropriate for the method. | ✓ | ✓ | |
| • Linear Regression criteria appropriate if required ($r > 0.995$). | ✓ | ✓ | |
| • Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$). | | | ✓ |
| • For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005? | ✓ | ✓ | |
| • All curve points show calculated concentrations. | ✓ | ✓ | |
| 3. Peaks correctly ID'd by data system. | ✓ | ✓ | |
| 5. Tune check frequency & criteria met and Tune check report attached. | ✓ | ✓ | |
| B. QA/QC | | | |
| 1. Are all QC samples properly linked in TALS? | ✓ | ✓ | |
| 2. Method blank, LCS/LCSD and MS/SD frequencies met. | ✓ | ✓ | |
| 3. LCS/LCSD and MB data are within control limits. If not, NCM is present. | ✓ | ✓ | |
| 4. Are MS/MSD recoveries and RPD within control limits? | ✓ | ✓ | |
| 5. Holding Times were met for prep and analytical. | ✓ | ✓ | |
| 6. IS/Surrogate recoveries meet criteria or properly noted. | ✓ | ✓ | |
| C. Sample Analysis | | | |
| 1. Was correct analysis performed and were project instructions followed? | ✓ | ✓ | |
| 2. If required, are compounds within RT windows? | ✓ | ✓ | |
| 3. If required, are positive hits confirmed and >40% RPD flagged? | | | ✓ |
| 4. Manual Integrations reviewed and appropriate. | ✓ | ✓ | |
| 5. All analytes correctly reported. (Primary, secondary, acceptable status) | ✓ | ✓ | |
| 6. Correct reporting limits used. (based on client request, prep factors, and dilutions) | ✓ | ✓ | |
| D. Documentation | | | |
| 1. Are all non-conformances documented/attached? NCM# | ✓ | ✓ | |
| 2. Do results make sense (e.g. dilutions, etc.)? | ✓ | ✓ | |
| 3. Have all flags been reviewed for appropriateness? | ✓ | ✓ | |
| 4. For level 3 and 4 reports, have forms and raw data been reviewed? | | ✓ | |
| 5. Was QC Checker run for this job? | ✓ | ✓ | |

*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): [Signature]

Date: 7/25/17

2nd Level Reviewer: [Signature]

Date: 7/26/2017

NCMS: 95271; 95251; 95280; 95249; 95252; 95285; 95286; 95277
~~95-9493~~ 94953
SBC 7/25/17

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 21JUL2017F_PFC

Worklist Number: 45761

Instrument Name: A8_N

Chrom Method: A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b

QC Batching: Disabled

Limit Group Batching: Enabled

| QC Batch: 1 | LC PFC_DOD ICAL Raw Batch: 175462 | LC PFC ICAL Raw Batch: 175463 | LC PFAS ICAL Raw Batch: 175464 |
|---------------------------|--------------------------------------|----------------------------------|-----------------------------------|
| # 1 CCV L4 | # 1 CCV L4 | # 2 MB 320-174599/1-A | # 2 MB 320-174599/1-A |
| # 2 MB 320-174599/1-A | # 2 MB 320-174599/1-A | # 3 LCS 320-174599/2-A | # 3 LCS 320-174599/2-A |
| # 3 LCS 320-174599/2-A | # 3 LCS 320-174599/2-A | # 4 LCSD 320-174599/3-A | # 4 LCSD 320-174599/3-A |
| # 4 LCSD 320-174599/3-A | # 4 LCSD 320-174599/3-A | # 5 320-29732-A-4-A | # 5 320-29732-A-4-A |
| # 5 320-29732-A-4-A | # 5 320-29732-A-4-A | # 6 160-23181-A-1-A | # 6 160-23181-A-1-A |
| # 6 160-23181-A-1-A | # 6 160-23181-A-1-A | # 7 160-23181-A-2-B | # 7 160-23181-A-2-B |
| # 7 160-23181-A-2-B | # 7 160-23181-A-2-B | # 8 320-29816-A-1-B | # 8 320-29816-A-1-B |
| # 8 320-29816-A-1-B | # 8 320-29816-A-1-B | # 9 CCV L5 | # 9 CCV L5 |
| # 9 CCV L5 | # 9 CCV L5 | # 10 320-29816-A-2-B | # 10 320-29816-A-2-B |
| # 10 320-29816-A-2-B | # 10 320-29816-A-2-B | # 11 320-29409-B-1-B | # 11 320-29409-B-1-B |
| # 11 320-29409-B-1-B | # 11 320-29409-B-1-B | # 12 320-29409-B-2-B | # 12 320-29409-B-2-B |
| # 12 320-29409-B-2-B | # 12 320-29409-B-2-B | # 13 320-29409-B-4-D | # 13 320-29409-B-4-D |
| # 13 320-29409-B-4-D | # 13 320-29409-B-4-D | # 14 320-29409-B-4-E MS | # 14 320-29409-B-4-E MS |
| # 14 320-29409-B-4-E MS | # 14 320-29409-B-4-E MS | # 15 320-29409-B-4-F MSD | # 15 320-29409-B-4-F MSD |
| # 15 320-29409-B-4-F MSD | # 15 320-29409-B-4-F MSD | # 16 320-29713-A-1-B | # 16 320-29713-A-1-B |
| # 16 320-29713-A-1-B | # 16 320-29713-A-1-B | # 17 320-29713-A-2-B | # 17 320-29713-A-2-B |
| # 17 320-29713-A-2-B | # 17 320-29713-A-2-B | # 18 320-29713-A-3-B | # 18 320-29713-A-3-B |
| # 18 320-29713-A-3-B | # 18 320-29713-A-3-B | # 19 320-29409-B-3-A | # 19 320-29409-B-3-A |
| # 19 320-29409-B-3-A | # 19 320-29409-B-3-A | # 20 CCV L4 | # 20 CCV L4 |
| # 20 CCV L4 | # 20 CCV L4 | # 21 320-29409-B-5-A | # 21 320-29409-B-5-A |
| # 21 320-29409-B-5-A | # 21 320-29409-B-5-A | # 22 CCV L5 | # 22 CCV L5 |
| # 22 CCV L5 | # 22 CCV L5 | # 23 MB 320-173307/1-A | # 23 MB 320-173307/1-A |
| # 23 MB 320-173307/1-A | # 23 MB 320-173307/1-A | # 24 LCS 320-173307/2-A | # 24 LCS 320-173307/2-A |
| # 24 LCS 320-173307/2-A | # 24 LCS 320-173307/2-A | # 25 320-29517-A-21-A | # 25 320-29517-A-21-A |
| # 25 320-29517-A-21-A | # 25 320-29517-A-21-A | # 26 320-29517-A-21-B MS | # 26 320-29517-A-21-B MS |
| # 26 320-29517-A-21-B MS | # 26 320-29517-A-21-B MS | # 27 320-29517-A-21-C MSD | # 27 320-29517-A-21-C MSD |
| # 27 320-29517-A-21-C MSD | # 27 320-29517-A-21-C MSD | # 28 CCV L4 | # 28 CCV L4 |
| # 28 CCV L4 | # 28 CCV L4 | | |

DBA low 95285
95286

DBA low 95271

MS/MSD x.R, LCS
pass 95250 SBC
7/28/17

can confirm DBA
MS/MSD high targets
95251

DBA low 95280
several

29409 original 174105 NCM Raised
FOBA RL 95249

RX worse than
original; all @ 1st

E flag 95252

CCV 175391 175392

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 24JUL2017D_PFC Worklist Number: 45829
 Instrument Name: A8_N Chrom Method: A8_N
 Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45829.b
 QC Batching: Disabled Limit Group Batching: Enabled

| QC Batch: 1 | LC PFC_DOD ICAL Raw Batch: 175752 | LC PFC ICAL Raw Batch: 175753 |
|---|---|---|
| # 1 CCV L5 # 2 320-29517-A-21-A # 3 320-29517-A-21-B MS # 4 320-29517-A-21-C MSD # 5 CCV L4 | # 1 CCV L5 # 2 320-29517-A-21-A # 3 320-29517-A-21-B MS # 4 320-29517-A-21-C MSD # 5 CCV L4 | # 1 CCV L5 <i>RL, DL 95277</i> # 5 CCV L4 |

CCV 175631

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 24JUL2017C_PFC
Instrument Name: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45827.b
QC Batching: Disabled

Worklist Number: 45827
Chrom Method: A8_N
Limit Group Batching: Enabled

| QC Batch: 1 | LC PFC_DOD ICAL Raw Batch: 175746 | LC PFC ICAL Raw Batch: 175747 |
|---------------------|---|--|
| # 1 CCV L4 | # 1 CCV L4 | # 1 CCV L4 |
| # 2 320-29713-A-3-B | # 2 320-29713-A-3-B | # 2 320-29713-A-3-B |
| # 3 320-29409-B-5-A | # 3 320-29409-B-5-A A | # 3 320-29409-B-5-A RL DL 45277 |
| # 4 CCV L5 | # 4 CCV L5 | # 4 CCV L5 |

CCVL 175632

02 RX~FOSA

Aqueous Extraction Analysis Sheet

AB 7/21/17

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/20/2017 9:40:00PM

Solid-Phase Extraction (SPE)

| Input Sample Lab ID (Analytical Method) | SDG (Job #) | GrossWt TareWt | InitAmnt FinAmnt | Rcvd | PHs Adj1 | Adj2 | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|--|----------------------|-------------------|---------------------|------|-------------|------|----------|-------------------|-------------|--|----------------------|
| 1 MB-320-174599/1 N/A | N/A | | 250 mL | | | | N/A | N/A | N/A | Time off the N-evap: 7:48 pm <i>RE DO</i> <i>SDC 7/25/17</i> | |
| | | | 0.50 mL | | | | | | | | |
| 2 LCS-320-174599/2 N/A | N/A | | 250 mL | | | | N/A | N/A | N/A | Time off the N-evap: 7:30 pm <i>RE</i> | |
| | | | 0.50 mL | | | | | | | | |
| 3 LCSD-320-174599/3 N/A | N/A | | 250 mL | | | | N/A | N/A | N/A | Time off the N-evap: 7:15 pm <i>RE</i> | |
| | | | 0.50 mL | | | | | | | | |
| 4 320-29732-A-4 (PFC_IDA_DOD5) | N/A (320-29732-1) | 285.36 g | 258.4 mL | | | | 7/23/17 | 16_Days | 4 | Time off the N-evap: 7:00 pm | |
| | | 26.98 g | 0.50 mL | | | | | | | | |
| 5 160-23181-A-1 (PFC_IDA) | N/A (160-23181-1) | 286.70 g | 258.6 mL | | | | 7/25/17 | 12_Days | 4 | Time off the N-evap: 8:00 pm (Cloudy yellow sample) | |
| | | 28.09 g | 0.50 mL | | | | | | | | |
| 6 160-23181-A-2 (PFC_IDA) | N/A (160-23181-1) | 279.64 g | 252.1 mL | | | | 7/25/17 | 12_Days | 4 | Time off the N-evap: 6:00 pm | |
| | | 27.57 g | 0.50 mL | | | | | | | | |
| 7 320-29816-A-1 (PFC_IDA) | N/A (320-29816-1) | 279.11 g | 252.2 mL | | | | 7/28/17 | 12_Days | 4 | Time off the N-evap: 8:26 pm | |
| | | 26.94 g | 0.50 mL | | | | | | | | |
| 8 320-29816-A-2 (PFC_IDA) | N/A (320-29816-1) | 285.52 g | 257.2 mL | | | | 7/28/17 | 12_Days | 4 | Time off the N-evap: 6:48 pm | |
| | | 28.32 g | 0.50 mL | | | | | | | | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)










Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/20/2017 9:40:00PM

| | | | | | | | | | | | | |
|----|-------------------------------------|---|----------|----------|--|--|--|---------|---------|---|---|---|
| 9 | 320-29409-B-1 (PFC_IDA_DOD5) | N/A (320-29409-1) | 285.61 g | 257.7 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 6:40 pm (Cloudy white) |  |
| | | | 27.93 g | 0.50 mL | | | | | | | | |
| 10 | 320-29409-B-2 (PFC_IDA_DOD5) | N/A (320-29409-1) | 281.00 g | 253 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 6:40 pm (Cloudy white) |  |
| | | | 28.03 g | 0.50 mL | | | | | | | | |
| 11 | 320-29409-B-4 (PFC_IDA_DOD5) | N/A (320-29409-1) | 293.27 g | 266 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 7:00 pm (Cloudy white) |  |
| | | | 27.25 g | 0.50 mL | | | | | | | | |
| 12 | 320-29409-B-4-MS (PFC_IDA_DOD5) | N/A (320-29409-1) | 280.54 g | 253.3 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 5:36 pm 1st one to come off |  |
| | | | 27.28 g | 0.50 mL | | | | | | | | |
| 13 | 320-29409-B-4-MSD (PFC_IDA_DOD5) | N/A (320-29409-1) | 272.30 g | 245.4 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 7:30 pm (Cloudy white) |  |
| | | | 26.89 g | 0.50 mL | | | | | | | | |
| 14 | 320-29713-A-1 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 264.12 g | 236.4 mL | | | | 7/25/17 | 12_Days | 2 | Time off the N-evap: 8:26 pm |  |
| | | | 27.74 g | 0.50 mL | | | | | | | | |
| 15 | 320-29713-A-2 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 280.48 g | 252.6 mL | | | | 7/25/17 | 12_Days | 2 | Time off the N-evap: 8:00 pm |  |
| | | | 27.90 g | 0.50 mL | | | | | | | | |
| 16 | 320-29713-A-3 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 274.81 g | 247.3 mL | | | | 7/25/17 | 12_Days | 2 | Time off the N-evap: 7:48 pm |  |
| | | | 27.50 g | 0.50 mL | | | | | | | | |
| 17 | 320-29409-B-3 (PFC_IDA_DOD5) | N/A (320-29409-1) | 290.75 g | 263.2 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 6:48 pm (Cloudy white) |  |
| | | | 27.55 g | 0.50 mL | | | | | | | | |

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5x

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Branscum, Cassie

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

Batch Open: 7/18/2017 7:22:00AM

Batch End: 7/20/17 2:40

Rx
MM 7/20/17
TO SA

Solid-Phase Extraction (SPE)

| Input Sample Lab ID (Analytical Method) | SDG (Job #) | GrossWt TareWt | InitAmnt FinAmnt | Rcvd | PHs Adj1 | Adj2 | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|--|----------------------|-------------------|---------------------|------|-------------|------|----------|-------------------|-------------|------------------------------|----------------------|
| 1 MB-320-174599/1 N/A | N/A | | 250 mL | | | | N/A | N/A | N/A | PORT 1 7:48 | |
| | | | 0.50 mL | | | | | | | | |
| 2 LCS-320-174599/2 N/A | N/A | | 250 mL | | | | N/A | N/A | N/A | PORT 2 7:30 | |
| | | | 0.50 mL | | | | | | | | |
| 3 LCSD-320-174599/3 N/A | N/A | | 250 mL | | | | N/A | N/A | N/A | PORT 3 7:15 | |
| | | | 0.50 mL | | | | | | | | |
| 4 320-29732-A-4 (PFC_IDA_DOD5) | N/A (320-29732-1) | 285.36 g | 258.4 mL | | | | 7/23/17 | 16_Days | 4 | PORT 4 7:00 PM | |
| | | 26.98 g | 0.50 mL | | | | | | | | |
| 5 160-23181-A-1 (PFC_IDA) | N/A (160-23181-1) | 286.70 g | 258.6 mL | | | | 7/25/17 | 12_Days | 4 | PORT 5 8:00 cloudy yellow | |
| | | 28.09 g | 0.50 mL | | | | | | | | |
| 6 160-23181-A-2 (PFC_IDA) | N/A (160-23181-1) | 279.64 g | 252.1 mL | | | | 7/25/17 | 12_Days | 4 | PORT 6 (LPM) | |
| | | 27.57 g | 0.50 mL | | | | | | | | |
| 7 320-29816-A-1 (PFC_IDA) | N/A (320-29816-1) | 279.11 g | 252.2 mL | | | | 7/28/17 | 12_Days | 4 | PORT 7 8:24 | |
| | | 26.94 g | 0.50 mL | | | | | | | | |
| 8 320-29816-A-2 (PFC_IDA) | N/A (320-29816-1) | 285.52 g | 257.2 mL | | | | 7/28/17 | 12_Days | 4 | PORT 8 6:48 | |
| | | 28.32 g | 0.50 mL | | | | | | | | |
| 9 320-29409-B-1 (PFC_IDA_DOD5) | N/A (320-29409-1) | 285.61 g | 257.7 mL | | | | 7/7/17 | 8_Days | 4 | PORT 9 6:40 milky white | |
| | | 27.93 g | 0.50 mL | | | | | | | | |
| 10 320-29409-B-2 (PFC_IDA_DOD5) | N/A (320-29409-1) | 281.00 g | 253 mL | | | | 7/7/17 | 8_Days | 4 | PORT 10 6:40 milky white | |
| | | 28.03 g | 0.50 mL | | | | | | | | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)









Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End:

| | | | | | | | | | | | |
|----|-------------------------------------|---|----------|----------|--|-----|---------|---------|---|---|---|
| 11 | 320-29409-B-4 (PFC_IDA_DOD5) | N/A (320-29409-1) | 293.27 g | 266 mL | | | 7/7/17 | 8_Days | 4 | PDA 11 7:00 pm murky white |  |
| | | | 27.25 g | 0.50 mL | | | | | | | |
| 12 | 320-29409-B-4-MS (PFC_IDA_DOD5) | N/A (320-29409-1) | 280.54 g | 253.3 mL | | | 7/7/17 | 8_Days | 4 | PDA 12 (1 stone to come off 6:30) cloudy white |  |
| | | | 27.28 g | 0.50 mL | | | | | | | |
| 13 | 320-29409-B-4-MSD (PFC_IDA_DOD5) | N/A (320-29409-1) | 272.30 g | 245.4 mL | | | 7/7/17 | 8_Days | 4 | PDA 13 7:30 cloudy white |  |
| | | | 26.89 g | 0.50 mL | | | | | | | |
| 14 | 320-29713-A-1 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 264.12 g | 236.4 mL | | | 7/25/17 | 12_Days | 2 | PDA 14 8:24 |  |
| | | | 27.74 g | 0.50 mL | | | | | | | |
| 15 | 320-29713-A-2 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 280.48 g | 252.6 mL | | | 7/25/17 | 12_Days | 2 | PDA 15 8:00 |  |
| | | | 27.90 g | 0.50 mL | | | | | | | |
| 16 | 320-29713-A-3 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 274.81 g | 247.3 mL | | | 7/25/17 | 12_Days | 2 | PDA 16 6:48 cloudy white |  |
| | | | 27.50 g | 0.50 mL | | | | | | | |
| 17 | 320-29409-B-3 (PFC_IDA_DOD5) | N/A (320-29409-1) | 290.75 g | 263.2 mL | | | 7/7/17 | 8_Days | 4 | PDA 17 7:48 |  |
| | | | 27.55 g | 0.50 mL | | | | | | | |
| 18 | 320-29409-B-5 (PFC_IDA_DOD5) | N/A (320-29409-1) | 286.94 g | 260 mL | | | 7/7/17 | 8_Days | 4 | PDA 18 6:08 pm RI IDAs |  |
| | | | 26.97 g | 0.50 mL | | | | | | | |
| 19 | N/A | N/A | | | | N/A | N/A | N/A | | PDA 19 | |
| 20 | N/A | N/A | | | | N/A | N/A | N/A | | PDA 20 | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Notes

| | |
|--------------------------------|-----------------|
| Manifold ID | 12,13 |
| Methanol ID | 973171 |
| Hexane ID | 958899 |
| Sodium Hydroxide ID | 966118 |
| First Start time | NA |
| First End time | NA |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003036333A |
| Balance ID | QA-070 |
| H2O ID | 7/17/17 |
| Pipette ID | N32728F |
| Solvent Name | 0.3% NH4OH/MeOH |
| Solvent Lot # | 976948 |
| Analyst ID - Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop | NSH |
| Witness | |
| Acid Name | NA |
| Acid ID | NA |
| Reagent ID | NA |
| Reagent Lot Number | NA |
| SOP Number | WS-LC-0025 |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Comment

Comments

320-29409-B-1

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-2

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-4

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-4~MS

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-4~MSD

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-3

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-5

Rework Comments: Low 13C8 FOSA recovery.

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

| Lab ID | Reagent Code | Amount Added | Final Amount | By | Witness |
|-------------------|----------------|--------------|--------------|----|---------|
| MB 320-174599/1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| LCS 320-174599/2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| LCS 320-174599/2 | LCPFCSU_00100 | 500 uL | 0.50 mL | | |
| LCSD 320-174599/3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| LCSD 320-174599/3 | LCPFCSU_00100 | 500 uL | 0.50 mL | | |
| 320-29732-A-4 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 160-23181-A-1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 160-23181-A-2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29816-A-1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29816-A-2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29409-B-1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29409-B-2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29409-B-4 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29409-B-4 MS | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29409-B-4 MS | LCPFCSU_00100 | 500 uL | 0.50 mL | | |
| 320-29409-B-4 MSD | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29409-B-4 MSD | LCPFCSU_00100 | 500 uL | 0.50 mL | | |
| 320-29713-A-1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End:

| | | | | | |
|---------------|----------------|--------|---------|------------|-------------|
| 320-29713-A-2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | C8 7-25-17 | NSH 7/25/17 |
| 320-29713-A-3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | ↓ | ↓ |
| 320-29409-B-3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29409-B-5 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |

| Other Reagents: | | |
|-----------------|--------------|-------|
| Reagent | Amount/Units | Lot#: |
| | | |
| | | |
| | | |
| | | |
| | | |

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Preparation Batch Number(s): 174599

Test: PFL (water) Rx

Earliest Holding Time: 7/16/17

| Sample List Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
|---|--|--------------------------------|--------------------------------|
| Samples identified to the correct method | | / | ✓ |
| All necessary NCMs filed (including holding time) | | / | ✓ |
| Method/sample/login/QAS checked and correct | | / | ✓ |
| Worksheet Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
| All samples properly preserved | | NA | NA |
| Weights in anticipated range and not targeted | | / | ✓ |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | | / | ✓ |
| The pH is transcribed correctly in TALS | | NA | NA |
| All additional information transcribed into TALS is correct and raw data is attached | | / | ✓ |
| Comments are transcribed correctly in TALS | | / | ✓ |
| Reagents Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
| All necessary reagents not expired and entered into TALS | | / | ✓ |
| All spike amounts correct and added to necessary samples and QC | | / | ✓ |
| Batch Information | | 1 st Level Reviewer | 2 nd Level Reviewer |
| Date and time accurate and entered into TALS correctly | | / | ✓ |
| All necessary 'batch information' complete and entered into TALS correctly | | / | ✓ |

1st Level Reviewer: VAM

Date: 7/20/17

2nd Level Reviewer: TH

Date: 07/20/17

Comments: _____

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Solid SW-846-3500 Analysis Sheet

AS 7/20/17

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Batch Open: 7/10/2017 1:17:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End: 7/20/2017 9:40:00PM

Shake Extraction with Ultrasonic Bath Extraction

| Input Sample Lab ID (Analytical Method) | SDG (Job #) | Initial Amount | Final Amount | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|--|----------------------|-------------------|-----------------|----------|-------------------|-------------|---|----------------------|
| 1 MB-320-173307/1 N/A | N/A | 5.00 g | 1.00 mL | N/A | N/A | N/A | Time that came off the N-evap: 6:35 pm | MB-320-173307/1-A |
| 2 LCS-320-173307/2 N/A | N/A | 5.00 g | 1.00 mL | N/A | N/A | N/A | Time that came off the N-evap: 8:47 pm (These ports were barely open.) | LCS-320-173307/2-A |
| 3 320-29517-A-21 (PFC_IDA_DOD5) | N/A (320-29517-1) | 5.03 g | 1.00 mL | 7/5/17 | 8_Days | 4 | Time that came off the N-evap: 8:47 pm (These ports were barely open.) 5x | 320-29517-A-21-A |
| 4 320-29517-A-21-MS (PFC_IDA_DOD5) | N/A (320-29517-1) | 4.96 g | 1.00 mL | 7/5/17 | 8_Days | 4 | Time that came off the N-evap: 6:47 pm (These ports were barely open.) 5x | 320-29517-A-21-B MS |
| 5 320-29517-A-21-MSD (PFC_IDA_DOD5) | N/A (320-29517-1) | 5.05 g | 1.00 mL | 7/5/17 | 8_Days | 4 | Time that came off the N-evap: 6:47 pm (These ports were barely open.) 5x | 320-29517-A-21-C MSD |

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-173307






Analyst: Arauz, Horacio J

Batch Open: 7/10/2017 1:17:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End: 7/20/17 21:40

Shake Extraction with Ultrasonic Bath Extraction

| Input Sample Lab ID (Analytical Method) | SDG (Job #) | Initial Amount | Final Amount | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|--|----------------------|-------------------|-----------------|----------|-------------------|-------------|--|---|
| 1 MB-320-173307/1 N/A | N/A | 5.00 g | 1.00 mL | N/A | N/A | N/A | 6:35 pm |  |
| 2 LCS-320-173307/2 N/A | N/A | 5.00 g | 1.00 mL | N/A | N/A | N/A | 8:47 |  |
| 3 320-29517-A-21 (PFC_IDA_DOD5) | N/A (320-29517-1) | 5.03 g | 1.00 mL | 7/5/17 | 8_Days | 4 | } ports were barely open. |  |
| 4 320-29517-A-21-MS (PFC_IDA_DOD5) | N/A (320-29517-1) | 4.96 g | 1.00 mL | 7/5/17 | 8_Days | 4 | |  |
| 5 320-29517-A-21-MSD (PFC_IDA_DOD5) | N/A (320-29517-1) | 5.05 g | 1.00 mL | 7/5/17 | 8_Days | 4 | |  |

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Batch Open: 7/10/2017 1:17:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End: 7/20/2017 9:40:00PM

Batch Notes

Balance ID QA-070

Blank Sand Lot # FISHER 162639

Filter ID NA

Millipore Water Dispense Date 7-17-17

Analyst ID - Reagent Drop Witness TN

SPE Cartridge ID 017037054A

SPE Cartridge Type WAX 150mg

Hexane ID 958902

Methanol ID 973180

Ammonium Hydroxide/MeOH ID 987338

Sodium Hydroxide ID 977629

Methanolic Potassium Hydroxide ID 976014

Manifold ID 6

Interference check solution ID NA

Acetic Acid ID 429065

Batch Comment Spiked bottle #3; add on # 4 pipette HD05018

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Batch Open: 7/10/2017 1:17:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End: 7/20/2017 9:40:00PM

Comments

320-29517-A-21

Method Comments: include add on spikes

320-29517-A-21~MS

Method Comments: include add on spikes

320-29517-A-21~MSD

Method Comments: include add on spikes

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Batch Open: 7/10/2017 1:17:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Batch Notes

Balance ID QA-070

Blank Sand Lot # FISHER 162639

Filter ID NA

Millipore Water Dispense Date 7-17-17

Analyst ID - Reagent Drop Witness TN

SPE Cartridge ID 017037054A

SPE Cartridge Type WAX 150mg

Hexane ID 958902

Methanol ID 973180

Ammonium Hydroxide/MeOH ID 987338

Sodium Hydroxide ID 977629

Methanolic Potassium Hydroxide ID 976014

Manifold ID 6

Interference check solution ID NA

Acetic Acid ID 429065

Batch Comment Spiked bottle #3; add on # 4 pipette HD05018

Page 1058 of 1104

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Batch Open: 7/10/2017 1:17:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Reagent Additions Worksheet

| Lab ID | Reagent Code | Amount Added | Final Amount | By | Witness |
|--------------------|-----------------|--------------|--------------|-------------|-------------|
| MB 320-173307/1 | LCMPFC2SU_00025 | 1000 uL | 1.00 mL | HJA 7-10-17 | TN 07/10/17 |
| MB 320-173307/1 | LCMPFC2SU_00079 | 1000 uL | 1.00 mL | | |
| LCS 320-173307/2 | LCMPFC2SU_00025 | 1000 uL | 1.00 mL | | |
| LCS 320-173307/2 | LCMPFC2SU_00079 | 1000 uL | 1.00 mL | | |
| LCS 320-173307/2 | LCMPFC2SP_00032 | 1.00 mL | 1.00 mL | | |
| LCS 320-173307/2 | LCMPFC2SP_00100 | 1.00 mL | 1.00 mL | | |
| 320-29517-A-21 | LCMPFC2SU_00025 | 1000 uL | 1.00 mL | | |
| 320-29517-A-21 | LCMPFC2SU_00079 | 1000 uL | 1.00 mL | | |
| 320-29517-A-21 MS | LCMPFC2SU_00025 | 1000 uL | 1.00 mL | | |
| 320-29517-A-21 MS | LCMPFC2SU_00079 | 1000 uL | 1.00 mL | | |
| 320-29517-A-21 MS | LCMPFC2SP_00032 | 1.00 mL | 1.00 mL | | |
| 320-29517-A-21 MS | LCMPFC2SP_00100 | 1.00 mL | 1.00 mL | | |
| 320-29517-A-21 MSD | LCMPFC2SU_00025 | 1000 uL | 1.00 mL | | |
| 320-29517-A-21 MSD | LCMPFC2SU_00079 | 1000 uL | 1.00 mL | | |
| 320-29517-A-21 MSD | LCMPFC2SP_00032 | 1.00 mL | 1.00 mL | | |
| 320-29517-A-21 MSD | LCMPFC2SP_00100 | 1.00 mL | 1.00 mL | | |

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Batch Open: 7/10/2017 1:17:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Other Reagents:

| Reagent | Amount/Units | Lot#: |
|---------|--------------|-------|
| | | |
| | | |
| | | |
| | | |
| | | |

Page 1060 of 1104

Preparation Batch Number(s): 173307 Test: PFC (S)
 Earliest Holding Time: 07/10/17

| | 1 st Level Reviewer | 2 nd Level Reviewer |
|---|--------------------------------|--------------------------------|
| Sample List Tab | | |
| Samples identified to the correct method | / | / |
| All necessary NCMs filed (including holding time) | NA | NA |
| Method/sample/login/QAS checked and correct | / | / |
| Worksheet Tab | | |
| All samples properly preserved | NA | NA |
| Weights in anticipated range and not targeted | / | / |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | / | ✓ |
| The pH is transcribed correctly in TALS | NA | NA |
| All additional information transcribed into TALS is correct and raw data is attached | / | ✓ |
| Comments are transcribed correctly in TALS | / | ✓ |
| Reagents Tab | | |
| All necessary reagents not expired and entered into TALS | / | ✓ |
| All spike amounts correct and added to necessary samples and QC | / | ✓ |
| Batch Information | | |
| Date and time accurate and entered into TALS correctly | / | ✓ |
| All necessary 'batch information' complete and entered into TALS correctly | / | ✓ |

1st Level Reviewer: VPM

Date: 7/20/17

2nd Level Reviewer: TN

Date: 07/20/17

Comments: _____

Method ID PFC-IDA

Job # See below

Analyst (Print Name) (TP) Thor Phonosopha Analyst Initials TP

Date 7/24/17

| Sample# | Original F.V. (uL) | Aliquot (uL) | Dilution F.V. (uL) | Dilution Factor |
|----------|--------------------|--------------|--------------------|-----------------|
| 29713-3 | 500 | 60 | 300 | 5X |
| 29517-21 | 1000 | 60 | 300 | 5X |
| ↓ -21MS | 1000 | 60 | ↓ | ↓ |
| ↓ -21MSD | 1000 | 60 | ↓ | ↓ |
| 29682-31 | 500 | 60 | 300 | 5X |
| ↓ -31MS | ↓ | ↓ | ↓ | ↓ |
| ↓ -31MSD | ↓ | ↓ | ↓ | ↓ |
| 29732-1 | 500 | 30 | 300 | 10X |
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Comments:

HPLC/LCMS Data Review Checklist

Job Number(s): 480-120783; 29814; 29543
29732; 16023181; 29713;
29715
 Extraction Batch: 175097; 175074
 Delivery Rank: 4; 2

Work List ID(s): 45776; 45831; 45877; 45803
458 SBC 7/26/17
 Analysis Batch(es): 175528; 175757; 175951; 175952;
175966
 Due Date: various

| A. Calibration/Instrument Run QC | 1 st Level | 2 nd Level | N/A |
|--|-----------------------|-----------------------|-----|
| 1. ICAL locked in Chrom and TALS? ICAL Batch# <u>175476; 175477</u> | ✓ | ✓ | |
| 2. ICAL, CCV Frequency & Criteria met. | ✓ | ✓ | |
| • RF _{average} criteria appropriate for the method. | ✓ | ✓ | |
| • Linear Regression criteria appropriate if required ($r \geq 0.995$). | ✓ | ✓ | |
| • Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$). | ✓ | | ✓ |
| • For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005? | ✓ | ✓ | |
| • All curve points show calculated concentrations. | ✓ | ✓ | |
| 3. Peaks correctly ID'd by data system. | ✓ | ✓ | |
| 5. Tune check frequency & criteria met and Tune check report attached. | ✓ | ✓ | |
| B. QA/QC | | | |
| 1. Are all QC samples properly linked in TALS? | ✓ | ✓ | |
| 2. Method blank, LCS/LCSD and MS/SD frequencies met. | ✓ | ✓ | |
| 3. LCS/LCSD and MB data are within control limits. If not, NCM is present. | ✓ | ✓ | |
| 4. Are MS/MSD recoveries and RPD within control limits? | ✓ | ✓ | |
| 5. Holding Times were met for prep and analytical. | ✓ | ✓ | |
| 6. IS/Surrogate recoveries meet criteria or properly noted. | ✓ | ✓ | |
| C. Sample Analysis | | | |
| 1. Was correct analysis performed and were project instructions followed? | ✓ | ✓ | |
| 2. If required, are compounds within RT windows? | ✓ | ✓ | |
| 3. If required, are positive hits confirmed and >40% RPD flagged? | ✓ | ✓ | ✓ |
| 4. Manual Integrations reviewed and appropriate. | ✓ | ✓ | |
| 5. All analytes correctly reported. (Primary, secondary, acceptable status) | ✓ | ✓ | |
| 6. Correct reporting limits used. (based on client request, prep factors, and dilutions) | ✓ | ✓ | |
| D. Documentation | | | |
| 1. Are all non-conformances documented/attached? NCM# | ✓ | ✓ | |
| 2. Do results make sense (e.g. dilutions, etc.)? | ✓ | ✓ | |
| 3. Have all flags been reviewed for appropriateness? | ✓ | ✓ | |
| 4. For level 3 and 4 reports, have forms and raw data been reviewed? | | ✓ | |
| 5. Was QC Checker run for this job? | ✓ | ✓ | |

*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): [Signature]

Date: 7/26/17

2nd Level Reviewer: [Signature]

Date: 7/28/17

SBC 7/26/17
+BT

NCMS: 95290; 95505; 95293; 95489; 95483; 95485; 95486;
95487

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 23JUL2017A_PFC

Worklist Number: 45776

Instrument Name: A8_N

Chrom Method: A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b

QC Batching: Disabled

Limit Group Batching: Enabled

| QC Batch: 1 | LC PFC_DOD ICAL Raw Batch: 175528 | LC PFC ICAL Raw Batch: 175529 |
|---------------------------|---|------------------------------------|
| # 1 CCV L4 | # 1 CCV L4 | # 1 CCV L4 |
| # 2 MB 320-175097/1-A | # 2 MB 320-175097/1-A > 1/2 RL | # 2 MB 320-175097/1-A |
| # 3 LCS 320-175097/2-A | # 3 LCS 320-175097/2-A PFTREAT | # 3 LCS 320-175097/2-A |
| # 4 LCSD 320-175097/3-A | # 4 LCSD 320-175097/3-A PFTREAT | # 4 LCSD 320-175097/3-A |
| # 5 320-29788-A-1-A | | # 5 320-29788-A-1-A RX FOBA; PFTCA |
| # 6 320-29788-A-2-A | | # 6 320-29788-A-2-A RX FOBA; PFTCA |
| # 7 320-29788-A-3-A | | # 7 320-29788-A-3-A RX FOBA |
| # 8 320-29788-A-4-A | | # 8 320-29788-A-4-A ok |
| # 9 320-29788-A-5-A | | # 9 320-29788-A-5-A RX FOBA; PFTCA |
| # 10 320-29748-A-1-A | | # 10 320-29748-A-1-A |
| # 11 320-29748-A-2-A | | # 11 320-29748-A-2-A on hold |
| # 12 CCV L5 | # 12 CCV L5 | # 12 CCV L5 |
| # 13 320-29748-A-3-A | | # 13 320-29748-A-3-A |
| # 14 320-29748-A-4-A | | # 14 320-29748-A-4-A |
| # 15 320-29748-A-5-A | | # 15 320-29748-A-5-A |
| # 16 320-29732-C-1-A | # 16 320-29732-C-1-A 10x | |
| # 17 320-29732-C-2-A | # 17 320-29732-C-2-A RI; Report from RA | |
| # 18 320-29732-C-3-A | # 18 320-29732-C-3-A | |
| # 19 320-29302-B-4-A | | # 19 320-29302-B-4-A |
| # 20 320-29302-B-8-A | | # 20 320-29302-B-8-A |
| # 21 CCV L4 | # 21 CCV L4 | # 21 CCV L4 |
| # 22 320-29302-B-10-A | | # 22 320-29302-B-10-A |
| # 23 320-29302-B-10-B MS | | # 23 320-29302-B-10-B MS |
| # 24 320-29302-B-10-C MSD | | # 24 320-29302-B-10-C MSD |
| # 25 CCV L5 | # 25 CCV L5 | # 25 CCV L5 |

175074

LCS/LCSD 1-R
Samples < RL 95162

same day as
new ICAL 1754777 *see #24/17*

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 24JUL2017F_PFC Worklist Number: 45831
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b
QC Batching: Disabled Limit Group Batching: Enabled

| QC Batch: 1 | LC PFC_DOD ICAL Raw Batch: 175757 | LC PFC ICAL Raw Batch: 175758 |
|---------------------|--------------------------------------|----------------------------------|
| # 1 CCV L5 | # 1 CCV L5 | # 1 CCV L5 |
| # 2 320-29732-C-1-A | # 2 320-29732-C-1-A | |
| # 3 320-29732-C-2-A | # 3 320-29732-C-2-A | |
| # 4 CCV L4 | # 4 CCV L4 | # 4 CCV L4 |

cel 175631

RIDL 95293

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 25JUL2017D_PFC Worklist Number: 45877
 Instrument Name: A8_N Chrom Method: A8_N
 Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b
 QC Batching: Disabled Limit Group Batching: Enabled

| QC Batch: 1 | LC PFC_DOD ICAL Raw Batch: 175951 | LC PFC ICAL Raw Batch: 175952 | LC PFAS ICAL Raw Batch: 175953 |
|-------------------------|--------------------------------------|----------------------------------|-----------------------------------|
| # 1 CCV L4 | # 1 CCV L4 | # 1 CCV L4 | <i>LCSD</i> |
| # 2 MB 320-175074/1-A | # 2 MB 320-175074/1-A | # 2 MB 320-175074/1-A | <i>LCS high PFTEDA</i> |
| # 3 LCS 320-175074/2-A | # 3 LCS 320-175074/2-A | # 3 LCS 320-175074/2-A | <i>120783</i> |
| # 4 LCSD 320-175074/3-A | # 4 LCSD 320-175074/3-A <i>RI</i> | # 4 LCSD 320-175074/3-A | <i>29814</i> |
| # 5 160-23181-A-3-A | # 5 160-23181-A-3-A | # 5 160-23181-A-3-A | # 5 160-23181-A-3-A |
| # 6 160-23181-A-4-A | # 6 160-23181-A-4-A | # 6 160-23181-A-4-A | # 6 160-23181-A-4-A |
| # 7 160-23181-A-5-A | # 7 160-23181-A-5-A | # 7 160-23181-A-5-A | # 7 160-23181-A-5-A |
| # 8 160-23181-A-6-A | # 8 160-23181-A-6-A | # 8 160-23181-A-6-A | # 8 160-23181-A-6-A |
| # 9 320-29732-A-1-A | # 9 320-29732-A-1-A <i>PFTEDA</i> | | |
| #10 320-29732-A-2-A | #10 320-29732-A-2-A <i>only</i> | | |
| #11 320-29732-A-3-A | #11 320-29732-A-3-A | | |
| #12 CCV L5 | #12 CCV L5 | #12 CCV L5 | |
| #13 320-29713-A-4-A | #13 320-29713-A-4-A <i>50X</i> | #13 320-29713-A-4-A | #13 320-29713-A-4-A |
| #14 320-29713-A-5-A | #14 320-29713-A-5-A <i>RI</i> | #14 320-29713-A-5-A | #14 320-29713-A-5-A |
| #15 480-120783-A-1-A | #15 480-120783-A-1-A | #15 480-120783-A-1-A | #15 480-120783-A-1-A |
| #16 480-120783-A-2-A | #16 480-120783-A-2-A | #16 480-120783-A-2-A | #16 480-120783-A-2-A |
| #17 480-120783-A-3-A | #17 480-120783-A-3-A | #17 480-120783-A-3-A | #17 480-120783-A-3-A |
| #18 480-120783-A-4-A | #18 480-120783-A-4-A | #18 480-120783-A-4-A | #18 480-120783-A-4-A |
| #19 480-120783-A-5-A | #19 480-120783-A-5-A | #19 480-120783-A-5-A | #19 480-120783-A-5-A |
| #20 480-120783-A-6-A | #20 480-120783-A-6-A | #20 480-120783-A-6-A | #20 480-120783-A-6-A |
| #21 480-120783-A-7-A | #21 480-120783-A-7-A | #21 480-120783-A-7-A | #21 480-120783-A-7-A |
| #22 320-29814-A-3-A | #22 320-29814-A-3-A <i>FOSAKI</i> | #22 320-29814-A-3-A | #22 320-29814-A-3-A |
| #23 CCV L4 | #23 CCV L4 | #23 CCV L4 <i>RI</i> | |
| #24 320-29715-A-1-A | #24 320-29715-A-1-A | #24 320-29715-A-1-A | #24 320-29715-A-1-A |
| #25 320-29715-A-2-A | #25 320-29715-A-2-A | #25 320-29715-A-2-A | #25 320-29715-A-2-A |
| #26 320-29715-A-3-A | #26 320-29715-A-3-A | #26 320-29715-A-3-A | #26 320-29715-A-3-A |
| #27 CCV L5 | #27 CCV L5 | #27 CCV L5 | |

CCVL 175762

CCVL 175763

*LCS/LCSD : R
 PFTEDA; samples < RL
 NCM 95483*

*PFTEDA IDA high 95485
 UNA high 95486
 Several high 95487*

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 25JUL2017I_PFC Worklist Number: 45883
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45883.b
QC Batching: Disabled Limit Group Batching: Enabled

| QC Batch: 1 | LC PFC_DOD ICAL Raw Batch: 175966 | LC PFC ICAL Raw Batch: 175967 |
|----------------------|--------------------------------------|----------------------------------|
| # 1 CCV L4 | # 1 CCV L4 | # 1 CCV L4 |
| # 2 320-29543-A-68-A | # 2 320-29543-A-68-A | |
| # 3 CCV L5 | # 3 CCV L5 | # 3 CCV L5 |

CCV 175762

Aqueous Extraction Analysis Sheet

AS 7/23/17

(To Accompany Samples to Instruments)

Batch Number: 320-175097

Analyst: Branscum, Cassie

Batch Open: 7/20/2017 10:13:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/22/2017 12:30:00PM

** See Num: samples accidentally were dried for 50 mins instead of 15mins.**

Solid-Phase Extraction (SPE)

| Input Sample Lab ID (Analytical Method) | SDG (Job #) | GrossWt TareWt | InitAmnt FinAmnt | Rcvd | PHs Adj1 Adj2 | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|--|----------------------|-------------------|---------------------|------|------------------|----------|-------------------|-------------|---|----------------------|
| 1 MB-320-175097/1 N/A | N/A | | 250 mL | | | N/A | N/A | N/A | | MB-320-175097/1-A |
| | | | 0.50 mL | | | | | | | |
| 2 LCS-320-175097/2 N/A | N/A | | 250 mL | | | N/A | N/A | N/A | <i>RE 10 days PFC IDA SPE 7/25/17</i> | LCS-320-175097/2-A |
| | | | 0.50 mL | | | | | | | |
| 3 LCSD-320-175097/3 N/A | N/A | | 250 mL | | | N/A | N/A | N/A | <i>RE 50c 7/25/17 PFC IDA</i> | LCSD-320-175097/3-A |
| | | | 0.50 mL | | | | | | | |
| 4 320-29788-A-1 (PFC_IDA) | N/A (320-29788-1) | 287.39 g | 259.8 mL | | | 7/31/17 | 14_Days | 2 | | 320-29788-A-1-A |
| | | 27.62 g | 0.50 mL | | | | | | | |
| 5 320-29788-A-2 (PFC_IDA) | N/A (320-29788-1) | 284.32 g | 256.8 mL | | | 8/1/17 | 15_Days | 2 | | 320-29788-A-2-A |
| | | 27.52 g | 0.50 mL | | | | | | | |
| 6 320-29788-A-3 (PFC_IDA) | N/A (320-29788-1) | 283.58 g | 255.8 mL | | | 8/1/17 | 15_Days | 2 | | 320-29788-A-3-A |
| | | 27.75 g | 0.50 mL | | | | | | | |
| 7 320-29788-A-4 (PFC_IDA) | N/A (320-29788-1) | 288.45 g | 260.7 mL | | | 8/1/17 | 15_Days | 2 | | 320-29788-A-4-A |
| | | 27.80 g | 0.50 mL | | | | | | | |
| 8 320-29788-A-5 (PFC_IDA) | N/A (320-29788-1) | 295.20 g | 267.5 mL | | | 8/1/17 | 15_Days | 2 | | 320-29788-A-5-A |
| | | 27.67 g | 0.50 mL | | | | | | | |
| 9 320-29748-A-1 (PFC_IDA) | N/A (320-29748-1) | 266.59 g | 239 mL | | | 7/31/17 | 15_Day_Rush | 2 | <i>on hold</i> | 320-29748-A-1-A |
| | | 27.63 g | 0.50 mL | | | | | | | |
| 10 320-29748-A-2 (PFC_IDA) | N/A (320-29748-1) | 281.14 g | 253.5 mL | | | 7/31/17 | 15_Day_Rush | 2 | <i>on hold</i> | 320-29748-A-2-A |
| | | 27.66 g | 0.50 mL | | | | | | | |

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175097

Analyst: Branscum, Cassie

Batch Open: 7/20/2017 10:13:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/22/2017 12:30:00PM

| | | | | | | | | | | | | |
|----|---------------------------------|----------------------|---------------------|---------------------|--|--|--|---------|-------------|---|------------------------------------|----------------------|
| 11 | 320-29748-A-3 (PFC_IDA) | N/A (320-29748-1) | 279.04 g 27.85 g | 251.2 mL 0.50 mL | | | | 7/31/17 | 15_Day_Rush | 2 | on hold | 320-29748-A-3-A |
| 12 | 320-29748-A-4 (PFC_IDA) | N/A (320-29748-1) | 272.72 g 27.40 g | 245.3 mL 0.50 mL | | | | 7/31/17 | 15_Day_Rush | 2 | | 320-29748-A-4-A |
| 13 | 320-29748-A-5 (PFC_IDA) | N/A (320-29748-1) | 280.07 g 27.68 g | 252.4 mL 0.50 mL | | | | 7/31/17 | 15_Day_Rush | 2 | | 320-29748-A-5-A |
| 14 | 320-29732-C-1 (PFC_IDA_DOD5) | N/A (320-29732-1) | 283.61 g 27.32 g | 256.3 mL 0.50 mL | | | | 7/23/17 | 16_Days | 4 | 10X ✓ | 320-29732-C-1-A |
| 15 | 320-29732-C-2 (PFC_IDA_DOD5) | N/A (320-29732-1) | 278.12 g 27.30 g | 250.8 mL 0.50 mL | | | | 7/23/17 | 16_Days | 4 | Milky white samples after FV RI | 320-29732-C-2-A |
| 16 | 320-29732-C-3 (PFC_IDA_DOD5) | N/A (320-29732-1) | 286.52 g 26.98 g | 259.5 mL 0.50 mL | | | | 7/23/17 | 16_Days | 4 | Milky white samples after FV RI | 320-29732-C-3-A |
| 17 | 320-29302-B-4 (PFC_IDA) | N/A (320-29302-1) | 271.11 g 27.14 g | 244 mL 0.50 mL | | | | 7/10/17 | 12_Days | 4 | RX- Milky white samples after FV | 320-29302-B-4-A |
| 18 | 320-29302-B-8 (PFC_IDA) | N/A (320-29302-1) | 278.78 g 27.84 g | 250.9 mL 0.50 mL | | | | 7/10/17 | 12_Days | 4 | RX- Milky white samples after FV | 320-29302-B-8-A |
| 19 | 320-29302-B-10 (PFC_IDA) | N/A (320-29302-1) | 286.26 g 27.27 g | 259 mL 0.50 mL | | | | 7/10/17 | 12_Days | 4 | RX- Milky white samples after FV | 320-29302-B-10-A |
| 20 | 320-29302-B-10-MS (PFC_IDA) | N/A (320-29302-1) | 293.10 g 27.20 g | 265.9 mL 0.50 mL | | | | 7/10/17 | 12_Days | 4 | RX- Milky white samples after FV | 320-29302-B-10-MS-A |
| 21 | 320-29302-B-10-MSD (PFC_IDA) | N/A (320-29302-1) | 287.77 g 27.77 g | 260 mL 0.50 mL | | | | 7/10/17 | 12_Days | 4 | RX- Milky white samples after FV | 320-29302-B-10-MSD-A |

Prepped twice other batch: 175074

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175097

Analyst: Branscum, Cassie

Batch Open: 7/20/2017 10:13:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/22/2017 12:30:00PM

Batch Notes

Manifold ID 13,14
Methanol ID 983105
Hexane ID 981623
Sodium Hydroxide ID 988541
First Start time NA
First End time NA
SPE Cartridge Type WAX 500mg
Solid Phase Extraction Disk ID 003036333A
Balance ID QA-070
H2O ID 7/17/17
Pipette ID N32728F
Solvent Name 0.3% NH4OH/MeOH
Solvent Lot # 987338
Analyst ID - Reagent Drop CCB
Analyst ID - SU Reagent Drop CCB
Analyst ID - SU Reagent Drop NSH
Witness
Acid Name NA
Acid ID NA
Reagent ID NA
Reagent Lot Number NA
SOP Number WS-LC-0025

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175097

Analyst: Branscum, Cassie

Batch Open: 7/20/2017 10:13:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/22/2017 12:30:00PM

Batch Comment NA

Comments

320-29302-B-4

Rework Comments: FOSA IDA<1%

320-29302-B-8

Rework Comments: FOSA IDA<1%

320-29302-B-10

Rework Comments: FOSA IDA low

320-29302-B-10~MS

Rework Comments: FOSA IDA low

320-29302-B-10~MSD

Rework Comments: FOSA IDA low

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175097

Analyst: Branscum, Cassie

Batch Open: 7/20/2017 10:13:00AM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

| Lab ID | Reagent Code | Amount Added | Final Amount | By | Witness |
|-------------------|-----------------|--------------|--------------|-------------|-------------|
| MB 320-175097/1 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | NSH 7-20-17 | NSH 7/20/17 |
| MB 320-175097/1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| LCS 320-175097/2 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| LCS 320-175097/2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| LCS 320-175097/2 | LCMPFC2SP_00032 | 500 uL | 0.50 mL | | |
| LCS 320-175097/2 | LCMPFCSP_00100 | 500 uL | 0.50 mL | | |
| LCSD 320-175097/3 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| LCSD 320-175097/3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| LCSD 320-175097/3 | LCMPFC2SP_00032 | 500 uL | 0.50 mL | | |
| LCSD 320-175097/3 | LCMPFCSP_00100 | 500 uL | 0.50 mL | | |
| 320-29788-A-1 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29788-A-1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29788-A-2 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29788-A-2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29788-A-3 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29788-A-3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29788-A-4 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29788-A-4 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |

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500 mL

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175097

Analyst: Branscum, Cassie

Batch Open: 7/20/2017 10:13:00AM

Method Code: 320-3535_PFC-320

Batch End:

| | | | | | |
|---------------|-----------------|--------|---------|------------|-------------|
| 320-29788-A-5 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | CS 7-20-17 | NSH 7/20/17 |
| 320-29788-A-5 | LCMPFC2SU_00081 | 500 uL | 0.50 mL | | |
| 320-29748-A-1 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29748-A-1 | LCMPFC2SU_00081 | 500 uL | 0.50 mL | | |
| 320-29748-A-2 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29748-A-2 | LCMPFC2SU_00081 | 500 uL | 0.50 mL | | |
| 320-29748-A-3 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29748-A-3 | LCMPFC2SU_00081 | 500 uL | 0.50 mL | | |
| 320-29748-A-4 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29748-A-4 | LCMPFC2SU_00081 | 500 uL | 0.50 mL | | |
| 320-29748-A-5 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29748-A-5 | LCMPFC2SU_00081 | 500 uL | 0.50 mL | | |
| 320-29732-C-1 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29732-C-1 | LCMPFC2SU_00081 | 500 uL | 0.50 mL | | |
| 320-29732-C-2 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29732-C-2 | LCMPFC2SU_00081 | 500 uL | 0.50 mL | | |
| 320-29732-C-3 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29732-C-3 | LCMPFC2SU_00081 | 500 uL | 0.50 mL | | |
| 320-29302-B-4 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29302-B-4 | LCMPFC2SU_00081 | 500 uL | 0.50 mL | | |
| 320-29302-B-8 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175097

Analyst: Branscum, Cassie

Batch Open: 7/20/2017 10:13:00AM

Method Code: 320-3535_PFC-320

Batch End:

| | | | | | |
|--------------------|-----------------|--------|---------|-------------|-------------|
| 320-29302-B-8 | LCMPFCSU_00081 | 500 uL | 0.50 mL | CCJ 7-20-17 | NSH 7/20/17 |
| 320-29302-B-10 | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29302-B-10 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29302-B-10 MS | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29302-B-10 MS | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29302-B-10 MS | LCPFC2SP_00032 | 500 uL | 0.50 mL | | |
| 320-29302-B-10 MS | LCPFCSP_00100 | 500 uL | 0.50 mL | | |
| 320-29302-B-10 MSD | LCMPFC2SU_00025 | 500 uL | 0.50 mL | | |
| 320-29302-B-10 MSD | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29302-B-10 MSD | LCPFC2SP_00032 | 500 uL | 0.50 mL | | |
| 320-29302-B-10 MSD | LCPFCSP_00100 | 500 uL | 0.50 mL | | |

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| Other Reagents: | | |
|-----------------|--------------|-------|
| Reagent | Amount/Units | Lot#: |
| | | |
| | | |
| | | |
| | | |
| | | |

Preparation Batch Number(s): 175097

Test: PFC-IDA (W) Has Rx in batch.

Earliest Holding Time: 7-3-17

| Sample List Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
|---|--|--------------------------------|--------------------------------|
| Samples identified to the correct method | | / | ✓ |
| All necessary NCMs filed (including holding time) | | / | ✓ |
| Method/sample/login/QAS checked and correct | | / | ✓ |
| Worksheet Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
| All samples properly preserved | | NA | NA |
| Weights in anticipated range and not targeted | | / | ✓ |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | | / | ✓ |
| The pH is transcribed correctly in TALS | | NA | NA |
| All additional information transcribed into TALS is correct and raw data is attached | | / | ✓ |
| Comments are transcribed correctly in TALS | | / | ✓ |
| Reagents Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
| All necessary reagents not expired and entered into TALS | | / | ✓ |
| All spike amounts correct and added to necessary samples and QC | | / | ✓ |
| Batch Information | | 1 st Level Reviewer | 2 nd Level Reviewer |
| Date and time accurate and entered into TALS correctly | | / | ✓ |
| All necessary 'batch information' complete and entered into TALS correctly | | / | ✓ |

1st Level Reviewer: vpm

Date: 7/22/17

2nd Level Reviewer: [Signature]

Date: 7/22/17

Comments: _____

65

Aqueous Extraction Analysis Sheet

DOB 7/25/17

(To Accompany Samples to Instruments)

Batch Number: 320-175074

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/24/2017 10:05:00PM

Solid-Phase Extraction (SPE)

| Input Sample Lab ID (Analytical Method) | SDG (Job #) | GrossWt TareWt | InitAmnt FinAmnt | PHs Rcvd Adj1 Adj2 | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|--|----------------------|-------------------|---------------------|-----------------------|----------|-------------------|-------------|---|----------------------|
| 1 MB-320-175074/1 N/A | N/A | | 250.00 mL | | N/A | N/A | N/A | | MB 320-175074/1-A |
| | | | 0.50 mL | | | | | | |
| 2 LCS-320-175074/2 N/A | N/A | | 250.00 mL | | N/A | N/A | N/A | | LCS 320-175074/2-A |
| | | | 0.50 mL | | | | | | |
| 3 LCSD-320-175074/3 N/A | N/A | | 250.00 mL | | N/A | N/A | N/A | RI ✓ | LCSD 320-175074/3-A |
| | | | 0.50 mL | | | | | | |
| 4 160-23181-A-3 (PFC_IDA) | N/A (160-23181-1) | 283.50 g | 256.6 mL | | 7/25/17 | 12_Days | 4 | | 160-23181-A-3-A |
| | | 26.92 g | 0.50 mL | | | | | | |
| 5 160-23181-A-4 (PFC_IDA) | N/A (160-23181-1) | 272.22 g | 245 mL | | 7/25/17 | 12_Days | 4 | | 160-23181-A-4-A |
| | | 27.19 g | 0.50 mL | | | | | | |
| 6 160-23181-A-5 (PFC_IDA) | N/A (160-23181-1) | 270.14 g | 243.1 mL | | 7/25/17 | 12_Days | 4 | | 160-23181-A-5-A |
| | | 27.05 g | 0.50 mL | | | | | | |
| 7 160-23181-A-6 (PFC_IDA) | N/A (160-23181-1) | 285.31 g | 257.1 mL | | 7/25/17 | 12_Days | 4 | | 160-23181-A-6-A |
| | | 28.23 g | 0.50 mL | | | | | | |
| 8 320-29732-A-1 (PFC_IDA_DOD5) | N/A (320-29732-1) | 284.68 g | 258 mL | | 7/23/17 | 16_Days | 4 | SPE 7/25/17 Second Don't Drep - run | 320-29732-A-1-A |
| | | 26.67 g | 0.50 mL | | | | | | |
| 9 320-29732-A-2 (PFC_IDA_DOD5) | N/A (320-29732-1) | 279.04 g | 252 mL | | 7/23/17 | 16_Days | 4 | SPE 7/24/17 | 320-29732-A-2-A |
| | | 27.01 g | 0.50 mL | | | | | | |
| 10 320-29732-A-3 (PFC_IDA_DOD5) | N/A (320-29732-1) | 281.97 g | 254.6 mL | | 7/23/17 | 16_Days | 4 | | 320-29732-A-3-A |
| | | 27.36 g | 0.50 mL | | | | | | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)













Batch Number: 320-175074

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Method Code: 320-3535_PFC-320

Batch End:

| | | | | | | | | | | | | |
|----|-----------------------------|---|----------|----------|--|--|--|---------|---------|---|-----|---|
| 11 | 320-29713-A-4 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 282.89 g | 255.9 mL | | | | 7/25/17 | 12_Days | 2 | 50x |  |
| | | | 27.02 g | 0.50 mL | | | | | | | | |
| 12 | 320-29713-A-5 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 285.74 g | 259.2 mL | | | | 7/25/17 | 12_Days | 2 | RF |  |
| | | | 26.51 g | 0.50 mL | | | | | | | | |
| 13 | 480-120783-A-1 (PFC_IDA) | N/A (480-120783-1) | 292.28 g | 264.1 mL | | | | 7/31/17 | 16_Days | 4 | |  |
| | | | 28.18 g | 0.50 mL | | | | | | | | |
| 14 | 480-120783-A-2 (PFC_IDA) | N/A (480-120783-1) | 280.85 g | 254.4 mL | | | | 7/31/17 | 16_Days | 4 | |  |
| | | | 26.49 g | 0.50 mL | | | | | | | | |
| 15 | 480-120783-A-3 (PFC_IDA) | N/A (480-120783-1) | 288.45 g | 260.2 mL | | | | 7/31/17 | 16_Days | 4 | |  |
| | | | 28.29 g | 0.50 mL | | | | | | | | |
| 16 | 480-120783-A-4 (PFC_IDA) | N/A (480-120783-1) | 287.11 g | 259.8 mL | | | | 7/31/17 | 16_Days | 4 | |  |
| | | | 27.33 g | 0.50 mL | | | | | | | | |
| 17 | 480-120783-A-5 (PFC_IDA) | N/A (480-120783-1) | 286.18 g | 259.4 mL | | | | 7/31/17 | 16_Days | 4 | |  |
| | | | 26.78 g | 0.50 mL | | | | | | | | |
| 18 | 480-120783-A-6 (PFC_IDA) | N/A (480-120783-1) | 280.18 g | 253.4 mL | | | | 7/31/17 | 16_Days | 4 | |  |
| | | | 26.82 g | 0.50 mL | | | | | | | | |
| 19 | 480-120783-A-7 (PFC_IDA) | N/A (480-120783-1) | 281.71 g | 254.3 mL | | | | 7/31/17 | 16_Days | 4 | |  |
| | | | 27.43 g | 0.50 mL | | | | | | | | |
| 20 | 320-29814-A-3 (PFC_IDA) | N/A (320-29814-1) | 271.19 g | 243.6 mL | | | | 8/9/17 | 20_Days | 2 | |  |
| | | | 27.55 g | 0.50 mL | | | | | | | | |
| 21 | 320-29715-A-1 (PFC_IDA) | N/A (320-29715-1) | 278.56 g | 251.6 mL | | | | 7/31/17 | 16_Days | 2 | |  |
| | | | 26.94 g | 0.50 mL | | | | | | | | |
| 22 | 320-29715-A-2 (PFC_IDA) | N/A (320-29715-1) | 282.02 g | 255.2 mL | | | | 7/31/17 | 16_Days | 2 | |  |
| | | | 26.87 g | 0.50 mL | | | | | | | | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)


Batch Number: 320-175074

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Method Code: 320-3535_PFC-320

Batch End:

| | | | | | | | | | | |
|----------------------------|----------------------|----------|----------|--|--|--|---------|---------|---|--|
| 320-29715-A-3 (PFC_IDA) | N/A (320-29715-1) | 280.16 g | 252.1 mL | | | | 7/31/17 | 16_Days | 2 |  320-29715-A-3-A |
| | | 28.05 g | 0.50 mL | | | | | | | |

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175074

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Notes

Manifold ID 2, 8

Methanol ID 983105

Hexane ID 958901

Sodium Hydroxide ID 988541

First Start time NA

First End time NA

SPE Cartridge Type WAX 500mg

Solid Phase Extraction Disk ID 003036333A

Balance ID QA-070

H2O ID 7/17/17

Pipette ID N32728F

Solvent Name 0.3% NH4OH/MeOH

Solvent Lot # 987338

Analyst ID - Reagent Drop HJA

Analyst ID - SU Reagent Drop HJA

Analyst ID - SU Reagent Drop JNS

Witness

Acid Name NA

Acid ID NA

Reagent ID NA

Reagent Lot Number NA

SOP Number WS-LC-0025

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175074

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Comment

Comments

Login Comments for Job 120783: L4Reviewed(Bfio)n/a - all sub only.

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175074

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

| Lab ID | Reagent Code | Amount Added | Final Amount | By | Witness |
|-------------------|----------------|--------------|--------------|-------------|-------------|
| MB 320-175074/1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | HSA 7-20-17 | JNS 7/20/17 |
| LCS 320-175074/2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| LCS 320-175074/2 | LCPFCSP_00100 | 500 uL | 0.50 mL | | |
| LCSD 320-175074/3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| LCSD 320-175074/3 | LCPFCSP_00100 | 500 uL | 0.50 mL | | |
| 160-23181-A-3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 160-23181-A-4 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 160-23181-A-5 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 160-23181-A-6 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29732-A-1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29732-A-2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29732-A-3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29713-A-4 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29713-A-5 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 480-120783-A-1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 480-120783-A-2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 480-120783-A-3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 480-120783-A-4 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175074

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Method Code: 320-3535_PFC-320

Batch End:

| | | | | | |
|----------------|----------------|--------|---------|-------------|-------------|
| 480-120783-A-5 | LCMPFCSU_00081 | 500 uL | 0.50 mL | HSA 7-20-17 | JMS 7/20/17 |
| 480-120783-A-6 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 480-120783-A-7 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29814-A-3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29715-A-1 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29715-A-2 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |
| 320-29715-A-3 | LCMPFCSU_00081 | 500 uL | 0.50 mL | | |

Other Reagents:

| Reagent | Amount/Units | Lot#: |
|---------|--------------|-------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

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Preparation Batch Number(s): 175074 Test: PFC (W)

Earliest Holding Time: _____

| Sample List Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
|---|--|--------------------------------|--------------------------------|
| Samples identified to the correct method | | / | / |
| All necessary NCMs filed (including holding time) | | / | / |
| Method/sample/login/QAS checked and correct | | / | / |
| Worksheet Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
| All samples properly preserved | | / | / |
| Weights in anticipated range and not targeted | | NA | NA |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | | / | / |
| The pH is transcribed correctly in TALS | | NA | NA |
| All additional information transcribed into TALS is correct and raw data is attached | | / | / |
| Comments are transcribed correctly in TALS | | / | / |
| Reagents Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
| All necessary reagents not expired and entered into TALS | | / | / |
| All spike amounts correct and added to necessary samples and QC | | / | / |
| Batch Information | | 1 st Level Reviewer | 2 nd Level Reviewer |
| Date and time accurate and entered into TALS correctly | | / | / |
| All necessary 'batch information' complete and entered into TALS correctly | | / | / |

1st Level Reviewer: VPM

Date: 7/25/17

2nd Level Reviewer: CAF

Date: 7/25/17

Comments: _____

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AB 7/23/17

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172514

Analyst: Arauz, Horacio J

Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End: 7/22/2017 9:00:00AM

Shake Extraction with Ultrasonic Bath Extraction

| | Input Sample Lab ID (Analytical Method) | SDG (Job #) | Initial Amount | Final Amount | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|----|--|----------------------|-------------------|-----------------|----------|-------------------|-------------|------------|----------------------|
| 1 | MB~320-172514/1 N/A | N/A | 5.00 g | 1.00 mL | N/A | N/A | N/A | | |
| 2 | LCS~320-172514/2 N/A | N/A | 5.00 g | 1.00 mL | N/A | N/A | N/A | | |
| 3 | 320-29543-A-62 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.07 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 4 | 320-29543-A-64 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.07 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 5 | 320-29543-A-65 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.07 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 6 | 320-29543-A-66 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.11 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 7 | 320-29543-A-68 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.09 g | 1.00 mL | 7/6/17 | 8_Days | 4 | RI IDA JBC | |
| 8 | 320-29543-A-69 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.11 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 9 | 320-29543-A-70 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.04 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 10 | 320-29543-A-71 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.06 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 11 | 320-29543-A-71~MS (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.11 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 12 | 320-29543-A-71~MSD (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.08 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 13 | 320-29543-A-72 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.08 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 14 | 320-29543-A-73 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.05 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |
| 15 | 320-29543-A-74 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.08 g | 1.00 mL | 7/6/17 | 8_Days | 4 | | |

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)




Batch Number: 320-172514

Analyst: Arauz, Horacio J

Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End: 7/22/2017 9:00:00AM

| | | | | | | | | |
|----|----------------------------------|----------------------|--------|---------|--------|--------|---|--|
| 16 | 320-29543-A-75 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.03 g | 1.00 mL | 7/6/17 | 8_Days | 4 |  3 2 0 - 2 9 5 4 3 - A - 7 5 - A |
| 17 | 320-29543-A-76 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.06 g | 1.00 mL | 7/6/17 | 8_Days | 4 |  3 2 0 - 2 9 5 4 3 - A - 7 6 - A |
| 18 | 320-29543-A-77 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.09 g | 1.00 mL | 7/6/17 | 8_Days | 4 |  3 2 0 - 2 9 5 4 3 - A - 7 7 - A |

Batch Notes

Balance ID QA-070

Blank Sand Lot # 162639

Filter ID NA

Millipore Water Dispense Date 07/10/17

Analyst ID - Reagent Drop Witness NSH

SPE Cartridge ID 017037054A

SPE Cartridge Type WAX 150mg

Hexane ID 958902

Methanol ID 973180

Ammonium Hydroxide/MeOH ID 987338

Sodium Hydroxide ID 977629

Methanolic Potassium Hydroxide ID 968358

Manifold ID 11,8

Interference check solution ID NA

Acetic Acid ID 429065

Batch Comment Spike bottle # 4; add on #2 Pipette HD05108

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)




Batch Number: 320-172514

Analyst: Arauz, Horacio J

Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

| | | | | | | | | |
|----|----------------------------------|----------------------|--------|---------|--------|--------|---|---|
| 16 | 320-29543-A-75 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.03 g | 1.00 mL | 7/6/17 | 8_Days | 4 |  |
| 17 | 320-29543-A-76 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.06 g | 1.00 mL | 7/6/17 | 8_Days | 4 |  |
| 18 | 320-29543-A-77 (PFC_IDA_DOD5) | N/A (320-29543-1) | 5.09 g | 1.00 mL | 7/6/17 | 8_Days | 4 |  |

Batch Notes

Balance ID QA-070

Blank Sand Lot # 162639

Filter ID NA

Millipore Water Dispense Date 7/10/17

Analyst ID - Reagent Drop Witness NSH

SPE Cartridge ID 017037054A

SPE Cartridge Type WAX 150mg

Hexane ID 958902

Methanol ID 973180

Ammonium Hydroxide/MeOH ID 987338

Sodium Hydroxide ID 977629

Methanolic Potassium Hydroxide ID 968358

Manifold ID 11,8

Interference check solution ID NA

Acetic Acid ID 429065

Batch Comment Spike bottle # 4; add on #2 Pipette HD05108

Page 1086 of 1104

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172514

Analyst: Arauz, Horacio J

Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Comments

| | |
|--------------------|--|
| 320-29543-A-62 | Method Comments: include add on spikes |
| 320-29543-A-64 | Method Comments: include add on spikes |
| 320-29543-A-65 | Method Comments: include add on spikes |
| 320-29543-A-66 | Method Comments: include add on spikes |
| 320-29543-A-68 | Method Comments: include add on spikes |
| 320-29543-A-69 | Method Comments: include add on spikes |
| 320-29543-A-70 | Method Comments: include add on spikes |
| 320-29543-A-71 | Method Comments: include add on spikes |
| 320-29543-A-71~MS | Method Comments: include add on spikes |
| 320-29543-A-71~MSD | Method Comments: include add on spikes |
| 320-29543-A-72 | Method Comments: include add on spikes |
| 320-29543-A-73 | Method Comments: include add on spikes |
| 320-29543-A-74 | Method Comments: include add on spikes |
| 320-29543-A-75 | Method Comments: include add on spikes |
| 320-29543-A-76 | Method Comments: include add on spikes |
| 320-29543-A-77 | Method Comments: include add on spikes |

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172514

Analyst: Arauz, Horacio J

Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Reagent Additions Worksheet

| Lab ID | Reagent Code | Amount Added | Final Amount | By | Witness |
|------------------|-----------------|--------------|--------------|------------|------------|
| MB 320-172514/1 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | NSA 7-5-17 | NSA 7-5-17 |
| MB 320-172514/1 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| LCS 320-172514/2 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| LCS 320-172514/2 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| LCS 320-172514/2 | LCMPFC2SP_00033 | 1.00 mL | 1.00 mL | | |
| LCS 320-172514/2 | LCMPFCSP_00095 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-62 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-62 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-64 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-64 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-65 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-65 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-66 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-66 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-68 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-68 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-69 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-69 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172514

Analyst: Arauz, Horacio J

Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

| | | | | | |
|--------------------|-----------------|---------|---------|------------|------------|
| 320-29543-A-70 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | HSA 7-5-17 | NSH 7-5-17 |
| 320-29543-A-70 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-71 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-71 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-71 MS | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-71 MS | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-71 MS | LCMPFC2SP_00033 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-71 MS | LCMPFCSP_00095 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-71 MSD | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-71 MSD | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-71 MSD | LCMPFC2SP_00033 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-71 MSD | LCMPFCSP_00095 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-72 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-72 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-73 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-73 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-74 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-74 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-75 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |
| 320-29543-A-75 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | | |
| 320-29543-A-76 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | | |

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172514

Analyst: Arauz, Horacio J

Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

| | | | | | |
|----------------|-----------------|---------|---------|------------|--|
| 320-29543-A-76 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | HSD 7-5-17 | |
| 320-29543-A-77 | LCMPFC2SU_00023 | 1.00 mL | 1.00 mL | ↓ | |
| 320-29543-A-77 | LCMPFCSU_00079 | 1000 uL | 1.00 mL | ↓ | |

Other Reagents:

| Reagent | Amount/Units | Lot#: |
|---------|--------------|-------|
| | | |
| | | |
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Page 1090 of 1104

Preparation Batch Number(s): 320-172514 Test: PFC-5

Earliest Holding Time: 7-5-17

| Sample List Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
|---|--|--------------------------------|--------------------------------|
| Samples identified to the correct method | | / | / |
| All necessary NCMs filed (including holding time) | | NA | NA |
| Method/sample/login/QAS checked and correct | | / | / |
| Worksheet Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
| All samples properly preserved | | NA | NA |
| Weights in anticipated range and not targeted | | / | / |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | | / | / |
| The pH is transcribed correctly in TALS | | NA | NA |
| All additional information transcribed into TALS is correct and raw data is attached | | / | / |
| Comments are transcribed correctly in TALS | | / | / |
| Reagents Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
| All necessary reagents not expired and entered into TALS | | / | / |
| All spike amounts correct and added to necessary samples and QC | | / | / |
| Batch Information | | 1 st Level Reviewer | 2 nd Level Reviewer |
| Date and time accurate and entered into TALS correctly | | / | / |
| All necessary 'batch information' complete and entered into TALS correctly | | / | / |

1st Level Reviewer: VPM

Date: 7/22/17

2nd Level Reviewer: NSH

Date: 7/22/17

Comments: _____

Method ID PFC-DDD

Job # 29732

Analyst (Print Name) Gnyhara Chandrasina

Analyst Initials SBC

Date 7/27/17

| <u>Sample#</u> | <u>Original F.V.</u> <u>(uL)</u> | <u>Aliquot (uL)</u> | <u>Dilution F.V.</u> <u>(uL)</u> | <u>Dilution Factor</u> |
|----------------|-------------------------------------|---------------------|-------------------------------------|------------------------|
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Comments:

HPLC/LCMS Data Review Checklist

Job Number(s): 480-121451, 320-29732

Work List ID(s): 45994

Extraction Batch: 175742

Analysis Batch(es): 176488, 176487

Delivery Rank 4

Due Date: 8-2-17

| A. Calibration/Instrument Run QC | 1 st Level | 2 nd Level | N/A |
|--|-----------------------|-----------------------|-----|
| 1. ICAL locked in Chrom and TALS? ICAL Batch# <u>175477, 175476</u> | ✓ | ✓ | |
| 2. ICAL, CCV Frequency & Criteria met. | ✓ | ✓ | |
| • RF _{average} criteria appropriate for the method. | ✓ | ✓ | |
| • Linear Regression criteria appropriate if required ($r \geq 0.995$). | ✓ | ✓ | |
| • Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$). | | | ✓ |
| • For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005? | ✓ | ✓ | |
| • All curve points show calculated concentrations. | ✓ | ✓ | |
| 3. Peaks correctly ID'd by data system. | ✓ | ✓ | |
| 5. Tune check frequency & criteria met and Tune check report attached. | ✓ | ✓ | |
| B. QA/QC | | | |
| 1. Are all QC samples properly linked in TALS? | ✓ | ✓ | |
| 2. Method blank, LCS/LCSD and MS/SD frequencies met. | ✓ | ✓ | ✓ |
| 3. LCS/LCSD and MB data are within control limits. If not, NCM is present. <u>NCM</u> | ✓ | ✓ | |
| 4. Are MS/MSD recoveries and RPD within control limits? | | | ✓ |
| 5. Holding Times were met for prep and analytical. | ✓ | ✓ | |
| 6. IS/Surrogate recoveries meet criteria or properly noted. <u>NCM</u> | ✓ | ✓ | |
| C. Sample Analysis | | | |
| 1. Was correct analysis performed and were project instructions followed? | ✓ | ✓ | |
| 2. If required, are compounds within RT windows? | | | ✓ |
| 3. If required, are positive hits confirmed and >40% RPD flagged? | | | ✓ |
| 4. Manual Integrations reviewed and appropriate. | ✓ | ✓ | |
| 5. All analytes correctly reported. (Primary, secondary, acceptable status) | ✓ | ✓ | |
| 6. Correct reporting limits used. (based on client request, prep factors, and dilutions) | ✓ | ✓ | |
| D. Documentation | | | |
| 1. Are all non-conformances documented/attached? NCM# <u>95778, 95781</u> | ✓ | ✓ | |
| 2. Do results make sense (e.g. dilutions, etc.)? | ✓ | ✓ | |
| 3. Have all flags been reviewed for appropriateness? | ✓ | ✓ | |
| 4. For level 3 and 4 reports, have forms and raw data been reviewed? | | ✓ | |
| 5. Was QC Checker run for this job? | ✓ | ✓ | |

JRB
7-28-17

*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): JRB

Date: 7-28-17

2nd Level Reviewer: [Signature]

Date: 7/28/17

TestAmerica Laboratories
 Worklist QC Batch Report

Worklist Name: 27JUL2017E_PFC Worklist Number: 45994
 Instrument Name: A8_N Chrom Method: A8_N
 Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b
 QC Batching: Disabled Limit Group Batching: Enabled

| QC Batch: 1 | LC PFC_DOD ICAL Raw Batch: 176487 | LC PFC ICAL Raw Batch: 176488 | LC PFAS ICAL Raw Batch: 176489 |
|-------------------------|--------------------------------------|----------------------------------|-----------------------------------|
| # 1 CCV L4 | # 1 CCV L4 | # 1 CCV L4 | |
| # 2 MB 320-175742/1-A | # 2 MB 320-175742/1-A | # 2 MB 320-175742/1-A | |
| # 3 LCS 320-175742/2-A | # 3 LCS 320-175742/2-A | # 3 LCS 320-175742/2-A | |
| # 4 LCSD 320-175742/3-A | # 4 LCSD 320-175742/3-A | # 4 LCSD 320-175742/3-A | |
| # 5 480-121451-C-1-A | | # 5 480-121451-C-1-A | # 5 480-121451-C-1-A |
| # 6 480-121451-C-2-A | | # 6 480-121451-C-2-A | # 6 480-121451-C-2-A |
| # 7 480-121451-C-4-A | | # 7 480-121451-C-4-A | # 7 480-121451-C-4-A |
| # 8 480-121451-C-5-A | | # 8 480-121451-C-5-A | # 8 480-121451-C-5-A |
| # 9 480-121451-C-7-A | | # 9 480-121451-C-7-A | # 9 480-121451-C-7-A |
| #10 480-121451-A-16-A | | #10 480-121451-A-16-A | #10 480-121451-A-16-A |
| #11 480-121451-A-17-A | | #11 480-121451-A-17-A | #11 480-121451-A-17-A |
| #12 CCV L5 | #12 CCV L5 | #12 CCV L5 | |
| #13 480-121451-A-18-A | | #13 480-121451-A-18-A | #13 480-121451-A-18-A |
| #14 320-29732-C-4-A | #14 320-29732-C-4-A | | |
| #15 CCV L4 | #15 CCV L4 | #15 CCV L4 | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175742

Analyst: Santos, Jonathan

A8 7/27/17

Batch Open: 7/25/2017 9:11:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/27/2017 2:07:00PM

Solid-Phase Extraction (SPE)

| Input Sample Lab ID (Analytical Method) | SDG (Job #) | GrossWt TareWt | InitAmnt FinAmnt | Rcvd | PHs Adj1 | Adj2 | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|--|-----------------------|-------------------|---------------------|------|-------------|------|----------|-------------------|-------------|----------|----------------------|
| 1 MB-320-175742/1 N/A | N/A | | 250.00 mL | | | | N/A | N/A | N/A | | |
| | | | 0.50 mL | | | | | | | | |
| 2 LCS-320-175742/2 N/A | N/A | | 250.00 mL | | | | N/A | N/A | N/A | | |
| | | | 0.50 mL | | | | | | | | |
| 3 LCSD-320-175742/3 N/A | N/A | | 250.00 mL | | | | N/A | N/A | N/A | | |
| | | | 0.50 mL | | | | | | | | |
| 4 480-121451-C-1 (PFC_IDA) | N/A (480-121451-1) | 291.97 g | 265.1 mL | | | | 8/2/17 | 8_Days | 4 | | |
| | | 26.86 g | 0.50 mL | | | | | | | | |
| 5 480-121451-C-2 (PFC_IDA) | N/A (480-121451-1) | 288.67 g | 262.1 mL | | | | 8/2/17 | 8_Days | 4 | | |
| | | 26.62 g | 0.50 mL | | | | | | | | |
| 6 480-121451-C-4 (PFC_IDA) | N/A (480-121451-1) | 288.46 g | 262.3 mL | | | | 8/2/17 | 8_Days | 4 | | |
| | | 26.21 g | 0.50 mL | | | | | | | | |
| 7 480-121451-C-5 (PFC_IDA) | N/A (480-121451-1) | 283.78 g | 257.1 mL | | | | 8/2/17 | 8_Days | 4 | | |
| | | 26.67 g | 0.50 mL | | | | | | | | |
| 8 480-121451-C-7 (PFC_IDA) | N/A (480-121451-1) | 276.24 g | 249.1 mL | | | | 8/2/17 | 8_Days | 4 | | |
| | | 27.16 g | 0.50 mL | | | | | | | | |
| 9 480-121451-A-16 (PFC_IDA) | N/A (480-121451-1) | 285.33 g | 258.6 mL | | | | 8/2/17 | 8_Days | 4 | | |
| | | 26.77 g | 0.50 mL | | | | | | | | |
| 10 480-121451-A-17 (PFC_IDA) | N/A (480-121451-1) | 294.44 g | 267.3 mL | | | | 8/2/17 | 8_Days | 4 | | |
| | | 27.19 g | 0.50 mL | | | | | | | | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)



Batch Number: 320-175742

Analyst: Santos, Jonathan

Batch Open: 7/25/2017 9:11:00AM

Method Code: 320-3535_PFC-320

Batch End:

| | | | | | | | | | | | |
|----|---------------------------------|-----------------------|----------|----------|--|--|--|---------|---------|---|---|
| 11 | 480-121451-A-18 (PFC_IDA) | N/A (480-121451-1) | 289.96 g | 263.1 mL | | | | 8/2/17 | 8_Days | 4 |  |
| | | | 26.90 g | 0.50 mL | | | | | | | |
| 12 | 320-29732-C-4 (PFC_IDA_DOD5) | N/A (320-29732-1) | 272.84 g | 245.5 mL | | | | 7/23/17 | 16_Days | 4 |  |
| | | | 27.30 g | 0.50 mL | | | | | | | |

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175742

Analyst: Santos, Jonathan

Batch Open: 7/25/2017 9:11:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Notes

| | |
|--------------------------------|-----------------|
| Manifold ID | 2, 8 |
| Methanol ID | 988835 |
| Hexane ID | 981625 |
| Sodium Hydroxide ID | 988541 |
| First Start time | NA |
| First End time | NA |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003237040A |
| Balance ID | QA-070 |
| H2O ID | 7/21/17 |
| Pipette ID | MD05306 |
| Solvent Name | 0.3% NH4OH/MeOH |
| Solvent Lot # | 987338 |
| Analyst ID - Reagent Drop | UB |
| Analyst ID - SU Reagent Drop | UB |
| Analyst ID - SU Reagent Drop | JNS |
| Witness | |
| Acid Name | NA |
| Acid ID | NA |
| Reagent ID | NA |
| Reagent Lot Number | NA |
| SOP Number | WS-LC-0025 |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175742

Analyst: Santos, Jonathan

Batch Open: 7/25/2017 9:11:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Comment NA

Comments

Login Comments for Job 121451: L4Reviewed(Bflo):
320-29732-C-4 ~Sub methods:8270D_SIM,PFC_IDA.~
Rework Comments: Extremely low FOSA IDA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175742

Analyst: Santos, Jonathan

Batch Open: 7/25/2017 9:11:00AM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

| Lab ID | Reagent Code | Amount Added | Final Amount | By | Witness |
|-------------------|---------------------|--------------|--------------|----|---------|
| MB 320-175742/1 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| LCS 320-175742/2 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| LCS 320-175742/2 | LCPFCSP_00110 | 500 uL | 0.50 mL | | |
| LCSD 320-175742/3 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| LCSD 320-175742/3 | LCPFCSP_00110 | 500 uL | 0.50 mL | | |
| 480-121451-C-1 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| 480-121451-C-2 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| 480-121451-C-4 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| 480-121451-C-5 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| 480-121451-C-7 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| 480-121451-A-16 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| 480-121451-A-17 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| 480-121451-A-18 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |
| 320-29732-C-4 | LCMPFC_ALL_SU_00004 | 500 uL | 0.50 mL | | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-175742

Analyst: Santos, Jonathan

Batch Open: 7/25/2017 9:11:00AM

Method Code: 320-3535_PFC-320

Batch End:

| Reagent | Other Reagents: | Lot#: |
|--------------|-----------------|-------|
| Amount/Units | | |
| | | |
| | | |
| | | |
| | | |
| | | |

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Preparation Batch Number(s): 175742 Test: 3535-PFC

Earliest Holding Time: 7/14/17

| Sample List Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
|---|--|--------------------------------|--------------------------------|
| Samples identified to the correct method | | ✓ | ✓ |
| All necessary NCMs filed (including holding time) | | ✓ | ✓ |
| Method/sample/login/QAS checked and correct | | ✓ | ✓ |
| Worksheet Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
| All samples properly preserved | | N/A | n/a |
| Weights in anticipated range and not targeted | | ✓ | ✓ |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | | ✓ | ✓ |
| The pH is transcribed correctly in TALS | | N/A | n/a |
| All additional information transcribed into TALS is correct and raw data is attached | | ✓ | ✓ |
| Comments are transcribed correctly in TALS | | ✓ | ✓ |
| Reagents Tab | | 1 st Level Reviewer | 2 nd Level Reviewer |
| All necessary reagents not expired and entered into TALS | | ✓ | ✓ |
| All spike amounts correct and added to necessary samples and QC | | ✓ | ✓ |
| Batch Information | | 1 st Level Reviewer | 2 nd Level Reviewer |
| Date and time accurate and entered into TALS correctly | | ✓ | ✓ |
| All necessary 'batch information' complete and entered into TALS correctly | | ✓ | ✓ |

1st Level Reviewer: JH

Date: 07/27/17

2nd Level Reviewer: JNS


Date: 7/27/17

Comments: _____

Shipping and Receiving Documents

West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

Regulatory Program: DW NPDES RCRA Other:

| | | | | | | | | | | | |
|--|--|---|-------------|---|----------|---------------------------------|---|----------------------|---|----------------------------|----------|
| Client Contact | | Project Manager: <u>Jeff Orient</u> | | Site Contact: <u>Kevin Lumbert</u> | | Date: <u>7/6/17</u> | | COC No: | | | |
| Company Name: <u>Tetra Tech</u> | | Tel/Fax: <u>1(412)921-8778</u> | | Lab Contact: <u>Daniel Altmeyer</u> | | Carrier: <u>Feed Ex</u> | | 1 of 1 COCs | | | |
| Address: <u>661 Anderson Dr.</u> | | Analysis Turnaround Time | | | | | | | | | |
| City/State/Zip: <u>Pittsburg PA 15220</u> | | <input checked="" type="checkbox"/> CALENDAR DAYS | | <input type="checkbox"/> WORKING DAYS | | | | | | | |
| Phone: <u>1(412)921-8778</u> | | TAT if different from Below _____ | | | | | | | | | |
| Fax: | | <input checked="" type="checkbox"/> 2 weeks | | <input type="checkbox"/> 1 week | | | | | | | |
| Project Name: <u>WE-21 Brunswick PFC Assessment</u> | | <input type="checkbox"/> 2 days | | <input type="checkbox"/> 1 day | | | | | | | |
| Site: <u>Former NAS Brunswick GWETS</u> | | | | | | | | | | | |
| PO# <u>11260805-WE21, PT. LT</u> | | | | | | | | | | | |
| Sample Identification | | Sample Date | Sample Time | Sample Type (C=Comp, G=Grab) | Matrix | # of Cont. | Filtered Sample (Y/N) | Perform MS/MSD (Y/N) |  320-29732 Chain of Custody | PFCs (C-11,15F) - LG (MVA) | |
| <u>TP-PFC-019-TPI</u> | | <u>7/6/17</u> | <u>0911</u> | <u>G</u> | <u>W</u> | <u>4</u> | <u>N</u> | <u>N</u> | | | <u>X</u> |
| <u>TP-PFC-019-MID-CARBON</u> | | <u>7/6/17</u> | <u>0916</u> | <u>G</u> | <u>W</u> | <u>4</u> | <u>N</u> | <u>N</u> | | | <u>X</u> |
| <u>TP-PFC-019-TPE</u> | | <u>7/6/17</u> | <u>0921</u> | <u>G</u> | <u>W</u> | <u>4</u> | <u>N</u> | <u>N</u> | | | <u>X</u> |
| <u>TP-PFC-019-TPE-D</u> | | <u>7/6/17</u> | <u>0000</u> | <u>G</u> | <u>W</u> | <u>4</u> | <u>N</u> | <u>N</u> | | | <u>X</u> |
| Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other _____ | | | | | | | | | | | |
| Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. | | | | | | | Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) | | | | |
| <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown | | | | | | | <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months | | | | |
| Special Instructions/QC Requirements & Comments: | | | | | | | | | | | |
| Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No | | Custody Seal No.: | | Cooler Temp. (°C): Obs'd: <u>5.1</u> Corr'd: <u>—</u> | | Therm ID No.: <u>AK-2</u> | | | | | |
| Relinquished by: <u>[Signature]</u> | | Company: <u>Tetra Tech</u> | | Date/Time: <u>7/6/17 1600</u> | | Received by: <u>[Signature]</u> | | Company: <u>FAW</u> | | | |
| Relinquished by: | | Company: | | Date/Time: | | Received by: | | Company: | | | |
| Relinquished by: | | Company: | | Date/Time: | | Received in Laboratory by: | | Company: | | | |

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Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-29732-1

Login Number: 29732
List Number: 1
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

| Question | Answer | Comment |
|--|---------------|----------------|
| Radioactivity wasn't checked or is \leq background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | N/A | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "360", "ng/L", "D", "12", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "256.3", "0.50", "29", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid (PFUnA)", "20", "ng/L", "U", "7.3", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "2706-90-3", "Perfluoropentanoic acid (PFPeA)", "190", "ng/L", "D", "9.6", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "307-24-4", "Perfluorohexanoic acid (PFHxA)", "350", "ng/L", "D", "7.7", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "307-55-1", "Perfluorododecanoic acid (PFDoA)", "20", "ng/L", "U", "5.7", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "1500", "ng/L", "D M", "7.3", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "335-76-2", "Perfluorodecanoic acid (PFDA)", "4.8", "ng/L", "J D", "4.3", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "9.8", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid (PFDS)", "29", "ng/L", "U", "12", "DL", "", "TRG", "", "", "39", "LOQ", "NO", "-99", "", "256.3", "0.50", "29", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "360", "ng/L", "D", "8.5", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "375-22-4", "Perfluorobutanoic acid (PFBA)", "80", "ng/L", "D", "4.5", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "9.8", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "55", "ng/L", "D", "9.0", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "70", "ng/L", "D", "7.8", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid (PFHpS)", "12", "ng/L", "J D", "7.0", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "20", "ng/L", "U", "6.4", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "5.6", "ng/L", "J D", "5.4", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "18", "ng/L", "J D", "6.2", "DL", "", "TRG", "", "", "390", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00990", "13C4 PFOA", "86", "ng/L", "", "-99", "DL", "", "TRG", "88", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "980", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00991", "13C4 PFOS", "77", "ng/L", "", "-99", "DL", "", "TRG", "82", "", "-99", "LOQ", "YES", "93.3", "", "256.3", "0.50", "980", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00992", "13C4 PFBA", "95", "ng/L", "", "-99", "DL", "", "TRG", "98", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "980", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00993", "13C2 PFHxA", "92", "ng/L", "", "-99", "DL", "", "TRG", "94", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "980", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00994", "18O2 PFHxS", "89", "ng/L", "", "-99", "DL", "", "TRG", "96", "", "-99", "LOQ", "YES", "92.3", "", "256.3", "0.50", "980", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00995", "13C5 PFNA", "75", "ng/L", "", "-99", "DL", "", "TRG", "77", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "980", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00996", "13C2 PFDA", "60", "ng/L", "", "-99", "DL", "", "TRG", "62", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "980", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00997", "13C2 PFUnA", "53", "ng/L", "", "-99", "DL", "", "TRG", "54", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "980", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00998", "13C2 PFDoA", "45", "ng/L", "", "-99", "DL", "", "TRG", "47", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "980", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL01056", "13C8 FOSA", "14", "ng/L", "Q", "-99", "DL", "", "TRG", "15", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "980", ""

"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL01892", "13C4-

PFHpA","100","ng/L","",-99,"DL","","TRG","105","",-99,"LOQ","YES","97.5","","256.3","0.50","980",""
"TP-PFC-019-TPI","537 (Modified)","DL","320-29732-1","TALSAC","STL01893","13C5
PFPeA","93","ng/L","",-99,"DL","","TRG","95","",-99,"LOQ","YES","97.5","","256.3","0.50","980",""
"TP-PFC-019-TPI","537 (Modified)","RE","320-29732-1","TALSAC","376-06-7","Perfluorotetradecanoic acid
(PFTeA)","1.6","ng/L","J M Q","0.39","DL","","TRG","","","2.4","LOQ","YES","-99","","258","0.50","0.97",""
"TP-PFC-019-TPI","537 (Modified)","RE","320-29732-1","TALSAC","STL00998","13C2
PFDoA","65","ng/L","",-99,"DL","","TRG","67","",-99,"LOQ","YES","96.9","","258","0.50","97",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","370","ng/L","E","1.2","DL","","TRG","","","3.9","LOQ","NO","-99","","256.3","0.50","2.9",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","2058-94-8","Perfluoroundecanoic acid
(PFUnA)","2.0","ng/L","U","0.73","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","2706-90-3","Perfluoropentanoic acid
(PFPeA)","180","ng/L","","0.96","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","307-24-4","Perfluorohexanoic acid
(PFHxA)","350","ng/L","","0.77","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","307-55-1","Perfluorododecanoic acid
(PFDoA)","2.0","ng/L","U","0.57","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","1300","ng/L","M E","0.73","DL","","TRG","","","2.4","LOQ","NO","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","335-76-2","Perfluorodecanoic acid
(PFDA)","1.1","ng/L","J","0.43","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","0.98",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","335-77-3","Perfluorodecanesulfonic acid
(PFDS)","2.9","ng/L","U","1.2","DL","","TRG","","","3.9","LOQ","YES","-99","","256.3","0.50","2.9",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","350","ng/L","","0.85","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","375-22-4","Perfluorobutanoic acid
(PFBA)","77","ng/L","M","0.45","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","0.98",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","52","ng/L","","0.90","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","66","ng/L","","0.78","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid
(PFHpS)","9.0","ng/L","","0.70","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","2.3","ng/L","J","0.64","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","72629-94-8","Perfluorotridecanoic Acid
(PFTriA)","2.0","ng/L","U","0.54","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","754-91-6","Perfluorooctane Sulfonamide
(FOSA)","1.1","ng/L","J","0.62","DL","","TRG","","","39","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","STL00990","13C4
PFOA","66","ng/L","",-99,"DL","","TRG","67","",-99,"LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","STL00991","13C4
PFOS","78","ng/L","",-99,"DL","","TRG","83","",-99,"LOQ","YES","93.3","","256.3","0.50","98",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","STL00992","13C4
PFBA","75","ng/L","",-99,"DL","","TRG","77","",-99,"LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","STL00993","13C2
PFHxA","69","ng/L","",-99,"DL","","TRG","71","",-99,"LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","STL00994","18O2
PFHxS","80","ng/L","",-99,"DL","","TRG","87","",-99,"LOQ","YES","92.3","","256.3","0.50","98",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","STL00995","13C5
PFNA","64","ng/L","",-99,"DL","","TRG","66","",-99,"LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","STL00996","13C2
PFDA","64","ng/L","",-99,"DL","","TRG","65","",-99,"LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","STL00997","13C2

PFUnA", "47", "ng/L", "", "-99", "DL", "", "TRG", "48", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "98", ""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL00998", "13C2
PFDoA", "44", "ng/L", "", "-99", "DL", "", "TRG", "45", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "98", ""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL01056", "13C8
FOSA", "13", "ng/L", "Q", "-99", "DL", "", "TRG", "14", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "98", ""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL01892", "13C4-
PFHpA", "91", "ng/L", "", "-99", "DL", "", "TRG", "93", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "98", ""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL01893", "13C5
PFPeA", "78", "ng/L", "", "-99", "DL", "", "TRG", "80", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "98", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RE", "320-29732-2", "TALSAC", "376-06-7", "Perfluorotetradecanoic
acid (PFTeA)", "1.4", "ng/L", "J M Q", "0.40", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "252", "0.50", "0.99", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RE", "320-29732-2", "TALSAC", "STL00998", "13C2
PFDoA", "91", "ng/L", "", "-99", "DL", "", "TRG", "92", "", "-99", "LOQ", "YES", "99.2", "", "252", "0.50", "99", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "1763-23-
1", "Perfluorooctanesulfonic acid
(PFOS)", "3.0", "ng/L", "U", "1.3", "DL", "", "TRG", "", "", "4.0", "LOQ", "YES", "-99", "", "250.8", "0.50", "3.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "2058-94-8", "Perfluoroundecanoic
acid (PFUnA)", "2.0", "ng/L", "U", "0.75", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "2706-90-3", "Perfluoropentanoic
acid (PFPeA)", "16", "ng/L", "", "0.99", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "307-24-4", "Perfluorohexanoic
acid (PFHxA)", "1.2", "ng/L", "J", "0.78", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "307-55-1", "Perfluorododecanoic
acid (PFDoA)", "2.0", "ng/L", "U", "0.58", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "335-67-1", "Perfluorooctanoic
acid (PFOA)", "2.0", "ng/L", "U M", "0.75", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "335-76-2", "Perfluorodecanoic
acid (PFDA)", "1.0", "ng/L", "U", "0.44", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "1.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
(PFDS)", "3.0", "ng/L", "U", "1.2", "DL", "", "TRG", "", "", "4.0", "LOQ", "YES", "-99", "", "250.8", "0.50", "3.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "355-46-
4", "Perfluorohexanesulfonic acid
(PFHxS)", "2.0", "ng/L", "U", "0.87", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "375-22-4", "Perfluorobutanoic
acid (PFBA)", "100", "ng/L", "", "0.46", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "1.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "375-73-
5", "Perfluorobutanesulfonic acid
(PFBS)", "2.0", "ng/L", "U", "0.92", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "375-85-9", "Perfluoroheptanoic
acid (PFHpA)", "2.0", "ng/L", "U M", "0.80", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "375-92-
8", "Perfluoroheptanesulfonic Acid
(PFHpS)", "2.0", "ng/L", "U", "0.71", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "375-95-1", "Perfluorononanoic
acid (PFNA)", "2.0", "ng/L", "U", "0.65", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "72629-94-
8", "Perfluorotridecanoic Acid
(PFTriA)", "2.0", "ng/L", "U", "0.55", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "754-91-6", "Perfluorooctane
Sulfonamide
(FOSA)", "2.5", "ng/L", "J", "0.64", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00990", "13C4
PFOA", "100", "ng/L", "", "-99", "DL", "", "TRG", "102", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""

"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00991", "13C4
PFOS", "94", "ng/L", "", "-99", "DL", "", "TRG", "99", "", "-99", "LOQ", "YES", "95.3", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00992", "13C4
PFBA", "100", "ng/L", "", "-99", "DL", "", "TRG", "101", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00993", "13C2
PFHxA", "100", "ng/L", "", "-99", "DL", "", "TRG", "100", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00994", "18O2
PFHxS", "97", "ng/L", "", "-99", "DL", "", "TRG", "102", "", "-99", "LOQ", "YES", "94.3", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00995", "13C5
PFNA", "81", "ng/L", "", "-99", "DL", "", "TRG", "81", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00996", "13C2
PFDA", "72", "ng/L", "", "-99", "DL", "", "TRG", "72", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00997", "13C2
PFUnA", "63", "ng/L", "", "-99", "DL", "", "TRG", "63", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00998", "13C2
PFDaA", "58", "ng/L", "", "-99", "DL", "", "TRG", "58", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL01056", "13C8
FOSA", "6.2", "ng/L", "Q", "-99", "DL", "", "TRG", "6", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL01892", "13C4-
PFHpA", "120", "ng/L", "", "-99", "DL", "", "TRG", "116", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL01893", "13C5
PFPeA", "100", "ng/L", "", "-99", "DL", "", "TRG", "102", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""
"TP-PFC-019-TPE", "537 (Modified)", "RE", "320-29732-3", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid
(PFTeA)", "1.5", "ng/L", "J M Q", "0.39", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "254.6", "0.50", "0.98", ""
"TP-PFC-019-TPE", "537 (Modified)", "RE", "320-29732-3", "TALSAC", "STL00998", "13C2
PFDaA", "85", "ng/L", "", "-99", "DL", "", "TRG", "87", "", "-99", "LOQ", "YES", "98.2", "", "254.6", "0.50", "98", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "2.9", "ng/L", "U", "1.2", "DL", "", "TRG", "", "", "3.9", "LOQ", "YES", "-99", "", "259.5", "0.50", "2.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid
(PFUnA)", "1.9", "ng/L", "U", "0.72", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "2706-90-3", "Perfluoropentanoic acid
(PFPeA)", "24", "ng/L", "", "0.95", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "307-24-4", "Perfluorohexanoic acid
(PFHxA)", "6.1", "ng/L", "", "0.76", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "307-55-1", "Perfluorododecanoic acid
(PFDaA)", "1.9", "ng/L", "U", "0.56", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "0.76", "ng/L", "J M", "0.72", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "335-76-2", "Perfluorodecanoic acid
(PFDA)", "0.96", "ng/L", "U", "0.42", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "0.96", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid
(PFDS)", "2.9", "ng/L", "U", "1.2", "DL", "", "TRG", "", "", "3.9", "LOQ", "YES", "-99", "", "259.5", "0.50", "2.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "1.9", "ng/L", "U", "0.84", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "375-22-4", "Perfluorobutanoic acid
(PFBA)", "85", "ng/L", "", "0.44", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "0.96", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "1.9", "ng/L", "U", "0.88", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "1.9", "ng/L", "U", "0.77", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid
(PFHpS)", "1.9", "ng/L", "U", "0.69", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "1.9", "ng/L", "U", "0.63", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "1.9", "ng/L", "U", "0.53", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "2.1", "ng/L", "J", "0.61", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00990", "13C4 PFOA", "99", "ng/L", "", "-99", "DL", "", "TRG", "102", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00991", "13C4 PFOS", "94", "ng/L", "", "-99", "DL", "", "TRG", "102", "", "-99", "LOQ", "YES", "92.1", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00992", "13C4 PFBA", "98", "ng/L", "", "-99", "DL", "", "TRG", "102", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00993", "13C2 PFHxA", "97", "ng/L", "", "-99", "DL", "", "TRG", "101", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00994", "18O2 PFHxS", "96", "ng/L", "", "-99", "DL", "", "TRG", "105", "", "-99", "LOQ", "YES", "91.1", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00995", "13C5 PFNA", "82", "ng/L", "", "-99", "DL", "", "TRG", "85", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00996", "13C2 PFDA", "90", "ng/L", "", "-99", "DL", "", "TRG", "93", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00997", "13C2 PFUnA", "75", "ng/L", "", "-99", "DL", "", "TRG", "78", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00998", "13C2 PFDaA", "67", "ng/L", "", "-99", "DL", "", "TRG", "69", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL01056", "13C8 FOSA", "2.0", "ng/L", "Q", "-99", "DL", "", "TRG", "2", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL01892", "13C4-PFHpA", "110", "ng/L", "", "-99", "DL", "", "TRG", "118", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL01893", "13C5 PFPeA", "95", "ng/L", "", "-99", "DL", "", "TRG", "98", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RE", "320-29732-4", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "2.0", "ng/L", "U H", "0.65", "DL", "", "TRG", "", "", "41", "LOQ", "NO", "-99", "", "245.5", "0.50", "2.0", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RE", "320-29732-4", "TALSAC", "STL01056", "13C8 FOSA", "1.8", "ng/L", "Q", "-99", "DL", "", "TRG", "2", "", "-99", "LOQ", "YES", "102", "", "245.5", "0.50", "100", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "2.9", "ng/L", "U", "1.2", "DL", "", "TRG", "", "", "3.9", "LOQ", "YES", "-99", "", "258.4", "0.50", "2.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid (PFUnA)", "1.9", "ng/L", "U", "0.72", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "2706-90-3", "Perfluoropentanoic acid (PFPeA)", "24", "ng/L", "", "0.96", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "307-24-4", "Perfluorohexanoic acid (PFHxA)", "6.4", "ng/L", "", "0.76", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "307-55-1", "Perfluorododecanoic acid (PFDaA)", "1.9", "ng/L", "U", "0.57", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "1.9", "ng/L", "U M", "0.72", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "335-76-2", "Perfluorodecanoic acid (PFDA)", "0.97", "ng/L", "U", "0.43", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "0.97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid (PFDS)", "2.9", "ng/L", "U", "1.2", "DL", "", "TRG", "", "", "3.9", "LOQ", "YES", "-99", "", "258.4", "0.50", "2.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "1.9", "ng/L", "U", "0.84", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "375-22-4", "Perfluorobutanoic acid (PFBA)", "82", "ng/L", "", "0.44", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "0.97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "1.9", "ng/L", "U", "0.89", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "1.9", "ng/L", "U", "0.78", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid (PFHpS)", "1.9", "ng/L", "U", "0.69", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "1.9", "ng/L", "U", "0.63", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid (PFTeA)", "0.97", "ng/L", "U", "0.39", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "0.97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "1.9", "ng/L", "U", "0.53", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "1.9", "ng/L", "U", "0.62", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "258.4", "0.50", "1.9", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00990", "13C4 PFOA", "110", "ng/L", "", "-99", "DL", "", "TRG", "111", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00991", "13C4 PFOS", "93", "ng/L", "", "-99", "DL", "", "TRG", "100", "", "-99", "LOQ", "YES", "92.5", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00992", "13C4 PFBA", "93", "ng/L", "", "-99", "DL", "", "TRG", "96", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00993", "13C2 PFHxA", "95", "ng/L", "", "-99", "DL", "", "TRG", "98", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00994", "18O2 PFHxS", "97", "ng/L", "", "-99", "DL", "", "TRG", "106", "", "-99", "LOQ", "YES", "91.5", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00995", "13C5 PFNA", "88", "ng/L", "", "-99", "DL", "", "TRG", "91", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00996", "13C2 PFDA", "82", "ng/L", "", "-99", "DL", "", "TRG", "85", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00997", "13C2 PFUnA", "64", "ng/L", "", "-99", "DL", "", "TRG", "67", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00998", "13C2 PFDaA", "68", "ng/L", "", "-99", "DL", "", "TRG", "70", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL01056", "13C8 FOSA", "0.31", "ng/L", "Q", "-99", "DL", "", "TRG", "0.3", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL01892", "13C4-PFHpA", "110", "ng/L", "", "-99", "DL", "", "TRG", "118", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""

"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL01893", "13C5 PFPeA", "95", "ng/L", "", "-99", "DL", "", "TRG", "98", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""

"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "40.0", "ng/L", "", "1.3", "DL", "", "SPK", "108", "", "4.0", "LOQ", "YES", "37.1", "", "250", "0.50", "3.0", ""

"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid (PFUnA)", "43.8", "ng/L", "", "0.75", "DL", "", "SPK", "109", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "2706-90-3", "Perfluoropentanoic acid (PFPeA)", "42.2", "ng/L", "", "0.99", "DL", "", "SPK", "106", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "307-24-4", "Perfluorohexanoic acid (PFHxA)", "42.7", "ng/L", "", "0.79", "DL", "", "SPK", "107", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "307-55-1", "Perfluorododecanoic acid (PFDaA)", "43.5", "ng/L", "", "0.58", "DL", "", "SPK", "109", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "42.1", "ng/L", "", "0.75", "DL", "", "SPK", "105", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "335-76-2", "Perfluorodecanoic acid (PFDA)", "43.8", "ng/L", "", "0.44", "DL", "", "SPK", "110", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "1.0", ""

"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid

(PFDS)", "39.6", "ng/L", "", "1.2", "DL", "", "SPK", "103", "", "4.0", "LOQ", "YES", "38.6", "", "250", "0.50", "3.0", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "38.9", "ng/L", "", "0.87", "DL", "", "SPK", "107", "", "2.5", "LOQ", "YES", "36.4", "", "250", "0.50", "2.0", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "375-22-4", "Perfluorobutanoic acid (PFBA)", "44.8", "ng/L", "", "0.46", "DL", "", "SPK", "112", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "1.0", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "38.5", "ng/L", "", "0.92", "DL", "", "SPK", "109", "", "2.5", "LOQ", "YES", "35.4", "", "250", "0.50", "2.0", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "40.6", "ng/L", "", "0.80", "DL", "", "SPK", "102", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid
(PFHpS)", "44.7", "ng/L", "", "0.71", "DL", "", "SPK", "117", "", "2.5", "LOQ", "YES", "38.1", "", "250", "0.50", "2.0", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "42.6", "ng/L", "", "0.65", "DL", "", "SPK", "106", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid
(PFTeA)", "48.6", "ng/L", "", "0.40", "DL", "", "SPK", "122", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "1.0", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid
(PFTriA)", "43.4", "ng/L", "", "0.55", "DL", "", "SPK", "109", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide
(FOSA)", "42.9", "ng/L", "", "0.64", "DL", "", "SPK", "107", "", "40", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00990", "13C4 PFOA", "119", "ng/L", "", "-99", "DL", "", "SPK", "119", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00991", "13C4 PFOS", "89.3", "ng/L", "", "-99", "DL", "", "SPK", "93", "", "-99", "LOQ", "YES", "95.6", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00992", "13C4 PFBA", "99.7", "ng/L", "", "-99", "DL", "", "SPK", "100", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00993", "13C2 PFHxA", "102", "ng/L", "", "-99", "DL", "", "SPK", "102", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00994", "18O2 PFHxS", "91.8", "ng/L", "", "-99", "DL", "", "SPK", "97", "", "-99", "LOQ", "YES", "94.6", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00995", "13C5 PFNA", "109", "ng/L", "", "-99", "DL", "", "SPK", "109", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00996", "13C2 PFDA", "126", "ng/L", "", "-99", "DL", "", "SPK", "126", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00997", "13C2 PFUnA", "110", "ng/L", "", "-99", "DL", "", "SPK", "110", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00998", "13C2 PFDaA", "96.6", "ng/L", "", "-99", "DL", "", "SPK", "97", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL01056", "13C8 FOA", "17.3", "ng/L", "Q", "-99", "DL", "", "SPK", "17", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL01892", "13C4-PFHpA", "135", "ng/L", "", "-99", "DL", "", "SPK", "135", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL01893", "13C5 PFPeA", "101", "ng/L", "", "-99", "DL", "", "SPK", "101", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-175074/2-A", "537 (Modified)", "RES", "LCS 320-175074/2-A", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid
(PFTeA)", "58.6", "ng/L", "", "0.40", "DL", "", "SPK", "146", "", "2.5", "LOQ", "YES", "40.0", "", "250.00", "0.50", "1.0", ""
"LCS 320-175074/2-A", "537 (Modified)", "RES", "LCS 320-175074/2-A", "TALSAC", "STL00998", "13C2 PFDaA", "105", "ng/L", "", "-99", "DL", "", "SPK", "105", "", "-99", "LOQ", "YES", "100", "", "250.00", "0.50", "100", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "38.2", "ng/L", "", "1.3", "DL", "", "SPK", "103", "", "4.0", "LOQ", "YES", "37.1", "", "250", "0.50", "3.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid (PFUnA)", "41.4", "ng/L", "", "0.75", "DL", "", "SPK", "104", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "2706-90-3", "Perfluoropentanoic acid (PFPeA)", "40.4", "ng/L", "", "0.99", "DL", "", "SPK", "101", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "307-24-4", "Perfluorohexanoic acid (PFHxA)", "41.9", "ng/L", "", "0.79", "DL", "", "SPK", "105", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "307-55-1", "Perfluorododecanoic acid (PFDoA)", "46.3", "ng/L", "", "0.58", "DL", "", "SPK", "116", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "39.8", "ng/L", "", "0.75", "DL", "", "SPK", "100", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "335-76-2", "Perfluorodecanoic acid (PFDA)", "42.6", "ng/L", "", "0.44", "DL", "", "SPK", "107", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "1.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid (PFDS)", "42.5", "ng/L", "", "1.2", "DL", "", "SPK", "110", "", "4.0", "LOQ", "YES", "38.6", "", "250", "0.50", "3.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "35.8", "ng/L", "", "0.87", "DL", "", "SPK", "98", "", "2.5", "LOQ", "YES", "36.4", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "375-22-4", "Perfluorobutanoic acid (PFBA)", "43.9", "ng/L", "", "0.46", "DL", "", "SPK", "110", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "1.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "39.2", "ng/L", "", "0.92", "DL", "", "SPK", "111", "", "2.5", "LOQ", "YES", "35.4", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "42.1", "ng/L", "", "0.80", "DL", "", "SPK", "105", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid (PFHpS)", "44.5", "ng/L", "", "0.71", "DL", "", "SPK", "117", "", "2.5", "LOQ", "YES", "38.1", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "42.2", "ng/L", "", "0.65", "DL", "", "SPK", "105", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "54.0", "ng/L", "", "0.55", "DL", "", "SPK", "135", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "43.1", "ng/L", "", "0.64", "DL", "", "SPK", "108", "", "40", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00990", "13C4 PFOA", "113", "ng/L", "", "-99", "DL", "", "SPK", "113", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00991", "13C4 PFOS", "89.9", "ng/L", "", "-99", "DL", "", "SPK", "94", "", "-99", "LOQ", "YES", "95.6", "", "250", "0.50", "100", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00992", "13C4 PFBA", "101", "ng/L", "", "-99", "DL", "", "SPK", "101", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00993", "13C2 PFHxA", "100", "ng/L", "", "-99", "DL", "", "SPK", "100", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00994", "18O2 PFHxS", "95.7", "ng/L", "", "-99", "DL", "", "SPK", "101", "", "-99", "LOQ", "YES", "94.6", "", "250", "0.50", "100", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00995", "13C5 PFNA", "97.6", "ng/L", "", "-99", "DL", "", "SPK", "98", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00996", "13C2 PFDA", "120", "ng/L", "", "-99", "DL", "", "SPK", "120", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""

"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00997", "13C2
PFUnA", "104", "ng/L", "", "-99", "DL", "", "SPK", "104", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00998", "13C2
PFDoA", "85.8", "ng/L", "", "-99", "DL", "", "SPK", "86", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL01056", "13C8
FOSA", "6.86", "ng/L", "Q", "-99", "DL", "", "SPK", "7", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL01892", "13C4-
PFHpA", "119", "ng/L", "", "-99", "DL", "", "SPK", "119", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL01893", "13C5
PFPeA", "102", "ng/L", "", "-99", "DL", "", "SPK", "102", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-175742/2-A", "537 (Modified)", "RES", "LCS 320-175742/2-A", "TALSAC", "754-91-6", "Perfluorooctane
Sulfonamide
(FOSA)", "44.4", "ng/L", "", "0.64", "DL", "", "SPK", "111", "", "40", "LOQ", "YES", "40.0", "", "250.00", "0.50", "2.0", ""
"LCS 320-175742/2-A", "537 (Modified)", "RES", "LCS 320-175742/2-A", "TALSAC", "STL01056", "13C8
FOSA", "62.0", "ng/L", "", "-99", "DL", "", "SPK", "62", "", "-99", "LOQ", "YES", "100", "", "250.00", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "1763-23-
1", "Perfluorooctanesulfonic acid
(PFOS)", "39.2", "ng/L", "", "1.3", "DL", "", "SPK", "106", "2", "4.0", "LOQ", "YES", "37.1", "LCS 320-174599/2-
A", "250", "0.50", "3.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "2058-94-
8", "Perfluoroundecanoic acid
(PFUnA)", "40.6", "ng/L", "", "0.75", "DL", "", "SPK", "101", "8", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "2706-90-
3", "Perfluoropentanoic acid
(PFPeA)", "43.9", "ng/L", "", "0.99", "DL", "", "SPK", "110", "4", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "307-24-
4", "Perfluorohexanoic acid
(PFHxA)", "42.9", "ng/L", "", "0.79", "DL", "", "SPK", "107", "0", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "307-55-
1", "Perfluorododecanoic acid
(PFDoA)", "43.8", "ng/L", "", "0.58", "DL", "", "SPK", "109", "1", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "335-67-
1", "Perfluorooctanoic acid
(PFOA)", "42.9", "ng/L", "", "0.75", "DL", "", "SPK", "107", "2", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "335-76-
2", "Perfluorodecanoic acid
(PFDA)", "42.5", "ng/L", "", "0.44", "DL", "", "SPK", "106", "3", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-
A", "250", "0.50", "1.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
(PFDS)", "38.4", "ng/L", "", "1.2", "DL", "", "SPK", "100", "3", "4.0", "LOQ", "YES", "38.6", "LCS 320-174599/2-
A", "250", "0.50", "3.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "355-46-
4", "Perfluorohexanesulfonic acid
(PFHxS)", "38.5", "ng/L", "", "0.87", "DL", "", "SPK", "106", "1", "2.5", "LOQ", "YES", "36.4", "LCS 320-174599/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "375-22-
4", "Perfluorobutanoic acid
(PFBA)", "47.2", "ng/L", "", "0.46", "DL", "", "SPK", "118", "5", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-

A", "250", "0.50", "1.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "37.4", "ng/L", "", "0.92", "DL", "", "SPK", "106", "3", "2.5", "LOQ", "YES", "35.4", "LCS 320-174599/2-A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "43.3", "ng/L", "", "0.80", "DL", "", "SPK", "108", "6", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid (PFHpS)", "41.6", "ng/L", "", "0.71", "DL", "", "SPK", "109", "7", "2.5", "LOQ", "YES", "38.1", "LCS 320-174599/2-A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "42.8", "ng/L", "", "0.65", "DL", "", "SPK", "107", "1", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid (PFTeA)", "49.4", "ng/L", "", "0.40", "DL", "", "SPK", "123", "2", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-A", "250", "0.50", "1.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "46.6", "ng/L", "", "0.55", "DL", "", "SPK", "117", "7", "2.5", "LOQ", "YES", "40.0", "LCS 320-174599/2-A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "43.3", "ng/L", "", "0.64", "DL", "", "SPK", "108", "1", "40", "LOQ", "YES", "40.0", "LCS 320-174599/2-A", "250", "0.50", "2.0", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00990", "13C4 PFOA", "125", "ng/L", "", "-99", "DL", "", "SPK", "125", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00991", "13C4 PFOS", "91.5", "ng/L", "", "-99", "DL", "", "SPK", "96", "", "-99", "LOQ", "YES", "95.6", "LCS 320-174599/2-A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00992", "13C4 PFBA", "97.0", "ng/L", "", "-99", "DL", "", "SPK", "97", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00993", "13C2 PFHxA", "105", "ng/L", "", "-99", "DL", "", "SPK", "105", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00994", "18O2 PFHxS", "92.2", "ng/L", "", "-99", "DL", "", "SPK", "97", "", "-99", "LOQ", "YES", "94.6", "LCS 320-174599/2-A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00995", "13C5 PFNA", "111", "ng/L", "", "-99", "DL", "", "SPK", "111", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00996", "13C2 PFDA", "128", "ng/L", "", "-99", "DL", "", "SPK", "128", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00997", "13C2 PFUnA", "117", "ng/L", "", "-99", "DL", "", "SPK", "117", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00998", "13C2 PFDaA", "101", "ng/L", "", "-99", "DL", "", "SPK", "101", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-

A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL01056", "13C8
FOSA", "20.3", "ng/L", "Q", "-99", "DL", "", "SPK", "20", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-
A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL01892", "13C4-
PFHpA", "132", "ng/L", "", "-99", "DL", "", "SPK", "132", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-
A", "250", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL01893", "13C5
PFPeA", "101", "ng/L", "", "-99", "DL", "", "SPK", "101", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-
A", "250", "0.50", "100", ""
"LCSD 320-175074/3-A", "537 (Modified)", "RES", "LCSD 320-175074/3-A", "TALSAC", "376-06-
7", "Perfluorotetradecanoic acid
(PFTeA)", "64.6", "ng/L", "Q", "0.40", "DL", "", "SPK", "162", "10", "2.5", "LOQ", "YES", "40.0", "LCS 320-175074/2-
A", "250.00", "0.50", "1.0", ""
"LCSD 320-175074/3-A", "537 (Modified)", "RES", "LCSD 320-175074/3-A", "TALSAC", "STL00998", "13C2
PFDoA", "106", "ng/L", "", "-99", "DL", "", "SPK", "106", "", "-99", "LOQ", "YES", "100", "LCS 320-175074/2-
A", "250.00", "0.50", "100", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "1763-23-
1", "Perfluorooctanesulfonic acid
(PFOS)", "41.3", "ng/L", "", "1.3", "DL", "", "SPK", "111", "8", "4.0", "LOQ", "YES", "37.1", "LCS 320-175097/2-
A", "250", "0.50", "3.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "2058-94-
8", "Perfluoroundecanoic acid
(PFUnA)", "42.6", "ng/L", "", "0.75", "DL", "", "SPK", "107", "3", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "2706-90-
3", "Perfluoropentanoic acid
(PFPeA)", "43.1", "ng/L", "", "0.99", "DL", "", "SPK", "108", "6", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "307-24-
4", "Perfluorohexanoic acid
(PFHxA)", "43.2", "ng/L", "", "0.79", "DL", "", "SPK", "108", "3", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "307-55-
1", "Perfluorododecanoic acid
(PFDoA)", "45.0", "ng/L", "", "0.58", "DL", "", "SPK", "113", "3", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "335-67-
1", "Perfluorooctanoic acid
(PFOA)", "41.6", "ng/L", "", "0.75", "DL", "", "SPK", "104", "4", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "335-76-
2", "Perfluorodecanoic acid
(PFDA)", "39.8", "ng/L", "", "0.44", "DL", "", "SPK", "100", "7", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-
A", "250", "0.50", "1.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
(PFDS)", "43.3", "ng/L", "", "1.2", "DL", "", "SPK", "112", "2", "4.0", "LOQ", "YES", "38.6", "LCS 320-175097/2-
A", "250", "0.50", "3.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "355-46-
4", "Perfluorohexanesulfonic acid
(PFHxS)", "35.3", "ng/L", "", "0.87", "DL", "", "SPK", "97", "1", "2.5", "LOQ", "YES", "36.4", "LCS 320-175097/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "375-22-

4", "Perfluorobutanoic acid
(PFBA)", "45.8", "ng/L", "", "0.46", "DL", "", "SPK", "114", "4", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-A", "250", "0.50", "1.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "39.5", "ng/L", "", "0.92", "DL", "", "SPK", "112", "1", "2.5", "LOQ", "YES", "35.4", "LCS 320-175097/2-A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "42.3", "ng/L", "", "0.80", "DL", "", "SPK", "106", "0", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid
(PFHpS)", "45.3", "ng/L", "", "0.71", "DL", "", "SPK", "119", "2", "2.5", "LOQ", "YES", "38.1", "LCS 320-175097/2-A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "40.9", "ng/L", "", "0.65", "DL", "", "SPK", "102", "3", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid
(PFTriA)", "48.6", "ng/L", "", "0.55", "DL", "", "SPK", "122", "10", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "44.6", "ng/L", "", "0.64", "DL", "", "SPK", "112", "3", "40", "LOQ", "YES", "40.0", "LCS 320-175097/2-A", "250", "0.50", "2.0", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00990", "13C4 PFOA", "116", "ng/L", "", "-99", "DL", "", "SPK", "116", "", "-99", "LOQ", "YES", "100", "LCS 320-175097/2-A", "250", "0.50", "100", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00991", "13C4 PFOS", "91.2", "ng/L", "", "-99", "DL", "", "SPK", "95", "", "-99", "LOQ", "YES", "95.6", "LCS 320-175097/2-A", "250", "0.50", "100", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00992", "13C4 PFBA", "111", "ng/L", "", "-99", "DL", "", "SPK", "111", "", "-99", "LOQ", "YES", "100", "LCS 320-175097/2-A", "250", "0.50", "100", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00993", "13C2 PFHxA", "105", "ng/L", "", "-99", "DL", "", "SPK", "105", "", "-99", "LOQ", "YES", "100", "LCS 320-175097/2-A", "250", "0.50", "100", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00994", "18O2 PFHxS", "103", "ng/L", "", "-99", "DL", "", "SPK", "108", "", "-99", "LOQ", "YES", "94.6", "LCS 320-175097/2-A", "250", "0.50", "100", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00995", "13C5 PFNA", "105", "ng/L", "", "-99", "DL", "", "SPK", "105", "", "-99", "LOQ", "YES", "100", "LCS 320-175097/2-A", "250", "0.50", "100", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00996", "13C2 PFDA", "128", "ng/L", "", "-99", "DL", "", "SPK", "128", "", "-99", "LOQ", "YES", "100", "LCS 320-175097/2-A", "250", "0.50", "100", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00997", "13C2 PFUnA", "104", "ng/L", "", "-99", "DL", "", "SPK", "104", "", "-99", "LOQ", "YES", "100", "LCS 320-175097/2-A", "250", "0.50", "100", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00998", "13C2 PFDaA", "93.7", "ng/L", "", "-99", "DL", "", "SPK", "94", "", "-99", "LOQ", "YES", "100", "LCS 320-175097/2-A", "250", "0.50", "100", ""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL01056", "13C8

FOSA", "25.1", "ng/L", "", "-99", "DL", "", "SPK", "25", "", "-99", "LOQ", "YES", "100", "LCS 320-175097/2-A", "250", "0.50", "100", ""

"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL01892", "13C4-PFHpA", "124", "ng/L", "", "-99", "DL", "", "SPK", "124", "", "-99", "LOQ", "YES", "100", "LCS 320-175097/2-A", "250", "0.50", "100", ""

"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL01893", "13C5-PFPeA", "104", "ng/L", "", "-99", "DL", "", "SPK", "104", "", "-99", "LOQ", "YES", "100", "LCS 320-175097/2-A", "250", "0.50", "100", ""

"LCSD 320-175742/3-A", "537 (Modified)", "RES", "LCSD 320-175742/3-A", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "45.0", "ng/L", "", "0.64", "DL", "", "SPK", "112", "1", "40", "LOQ", "YES", "40.0", "LCS 320-175742/2-A", "250.00", "0.50", "2.0", ""

"LCSD 320-175742/3-A", "537 (Modified)", "RES", "LCSD 320-175742/3-A", "TALSAC", "STL01056", "13C8-FOSA", "55.3", "ng/L", "", "-99", "DL", "", "SPK", "55", "", "-99", "LOQ", "YES", "100", "LCS 320-175742/2-A", "250.00", "0.50", "100", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "3.0", "ng/L", "U", "1.3", "DL", "", "TRG", "", "", "4.0", "LOQ", "YES", "-99", "", "250", "0.50", "3.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid (PFUnA)", "2.0", "ng/L", "U", "0.75", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "2706-90-3", "Perfluoropentanoic acid (PFPeA)", "2.0", "ng/L", "U", "0.99", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "307-24-4", "Perfluorohexanoic acid (PFHxA)", "2.0", "ng/L", "U", "0.79", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "307-55-1", "Perfluorododecanoic acid (PFDoA)", "2.0", "ng/L", "U", "0.58", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "2.0", "ng/L", "U", "0.75", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "335-76-2", "Perfluorodecanoic acid (PFDA)", "1.0", "ng/L", "U", "0.44", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "1.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid (PFDS)", "3.0", "ng/L", "U", "1.2", "DL", "", "TRG", "", "", "4.0", "LOQ", "YES", "-99", "", "250", "0.50", "3.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "2.0", "ng/L", "U", "0.87", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "375-22-4", "Perfluorobutanoic acid (PFBA)", "1.0", "ng/L", "U M", "0.46", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "1.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "2.0", "ng/L", "U", "0.92", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "2.0", "ng/L", "U", "0.80", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid (PFHpS)", "2.0", "ng/L", "U", "0.71", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "2.0", "ng/L", "U", "0.65", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid (PFTeA)", "0.711", "ng/L", "J M", "0.40", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "1.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "0.631", "ng/L", "J", "0.55", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""

"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "754-91-6", "Perfluorooctane

Sulfonamide (FOSA),"2.0","ng/L","U","0.64","DL","","TRG","","","40","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL00990","13C4
PFOA","136","ng/L","","-99","DL","","TRG","136","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL00991","13C4
PFOS","101","ng/L","","-99","DL","","TRG","105","","-99","LOQ","YES","95.6","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL00992","13C4
PFBA","113","ng/L","","-99","DL","","TRG","113","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL00993","13C2
PFHxA","115","ng/L","","-99","DL","","TRG","115","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL00994","18O2
PFHxS","105","ng/L","","-99","DL","","TRG","111","","-99","LOQ","YES","94.6","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL00995","13C5
PFNA","123","ng/L","","-99","DL","","TRG","123","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL00996","13C2
PFDA","138","ng/L","","-99","DL","","TRG","138","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL00997","13C2
PFUnA","137","ng/L","","-99","DL","","TRG","137","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL00998","13C2
PFDoA","114","ng/L","","-99","DL","","TRG","114","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL01056","13C8
FOSA","47.4","ng/L","","-99","DL","","TRG","47","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL01892","13C4-
PFHpA","148","ng/L","","-99","DL","","TRG","148","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","STL01893","13C5
PFPeA","112","ng/L","","-99","DL","","TRG","112","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-175074/1-A","537 (Modified)","RES","MB 320-175074/1-A","TALSAC","376-06-
7","Perfluorotetradecanoic acid (PFTeA)","0.807","ng/L","J
M","0.40","DL","","TRG","","","2.5","LOQ","YES","-99","","250.00","0.50","1.0",""
"MB 320-175074/1-A","537 (Modified)","RES","MB 320-175074/1-A","TALSAC","STL00998","13C2
PFDoA","116","ng/L","","-99","DL","","TRG","116","","-99","LOQ","YES","100","","250.00","0.50","100",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","1763-23-
1","Perfluorooctanesulfonic acid
(PFOS)","3.0","ng/L","U","1.3","DL","","TRG","","","4.0","LOQ","YES","-99","","250","0.50","3.0",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","2058-94-8","Perfluoroundecanoic
acid (PFUnA)","2.0","ng/L","U","0.75","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","2706-90-3","Perfluoropentanoic
acid (PFPeA)","2.0","ng/L","U","0.99","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","307-24-4","Perfluorohexanoic
acid (PFHxA)","2.0","ng/L","U","0.79","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","307-55-1","Perfluorododecanoic
acid (PFDoA)","2.0","ng/L","U","0.58","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","335-67-1","Perfluorooctanoic
acid (PFOA)","2.0","ng/L","U","0.75","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","335-76-2","Perfluorodecanoic
acid (PFDA)","1.0","ng/L","U","0.44","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","1.0",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","335-77-
3","Perfluorodecanesulfonic acid
(PFDS)","3.0","ng/L","U","1.2","DL","","TRG","","","4.0","LOQ","YES","-99","","250","0.50","3.0",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","355-46-
4","Perfluorohexanesulfonic acid
(PFHxS)","2.0","ng/L","U","0.87","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","375-22-4","Perfluorobutanoic
acid (PFBA)","1.0","ng/L","U","0.46","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","1.0",""
"MB 320-175097/1-A","537 (Modified)","RES","MB 320-175097/1-A","TALSAC","375-73-

5", "Perfluorobutanesulfonic acid (PFBS)", "2.0", "ng/L", "U", "0.92", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "2.0", "ng/L", "U", "0.80", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid (PFHpS)", "2.0", "ng/L", "U", "0.71", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "2.0", "ng/L", "U", "0.65", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "2.0", "ng/L", "U", "0.55", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "2.0", "ng/L", "U", "0.64", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "STL00990", "13C4 PFOA", "110", "ng/L", "", "-99", "DL", "", "TRG", "110", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "STL00991", "13C4 PFOS", "88.6", "ng/L", "", "-99", "DL", "", "TRG", "93", "", "-99", "LOQ", "YES", "95.6", "", "250", "0.50", "100", ""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "STL00992", "13C4 PFBA", "103", "ng/L", "", "-99", "DL", "", "TRG", "103", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
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| <u>Analyte</u> | <u>Concentration (ng/L)</u> | <u>LOQ (> or <)</u> |
|--|-----------------------------|---------------------------|
| Perfluorotetradecanoic acid (PFTeA) ⁽²⁾ | 0.807 | < |

⁽¹⁾ - Maximum concentration detected in the laboratory method blank, MB 320-174599/1-A, from preparation batch #320-174599 affecting the sample TP-PFC-019-TPE-D analyzed on 7/21/17.

⁽²⁾ - Maximum concentration detected in the laboratory method blank, MB 320-175074/1-A, from preparation batch #320-175074 affecting the reanalyses of samples TP-PFC-019-MID-CARBON, TP-PFC-019-TPE, and TP-PFC-019-TPI analyzed on 7/25/17.

The detected results reported for these compounds below the LOQ were qualified as non-detected, (U).

SURROGATE SPIKE RECOVERIES

The Percent Recoveries (%Rs) for the surrogate spike compound, 13C8-perfluorooctane sulfonamide (13C8-FOSA) were below the lower quality control limit in all the samples. Samples TP-PFC-019-MID-CARBON, TP-PFC-019-TPE, and TP-PFC-019-TPE-D had %Rs < 10%. Sample TP-PFC-019-TPE-D was re-extracted/reanalyzed outside the 14 day extraction holding time with similar results. According to the laboratory case narrative, the results for the re-reanalyses of the remaining samples confirmed the results. The %Rs for 13C8-FOSA for the re-extraction/reanalyses were not provided for these samples on the surrogate summary Form IIs. The results from the initial analyses of these samples were used in the data validation. The non-detected result reported for perfluorooctane sulfonamide (FOSA) in sample TP-PFC-019-TPE-D was qualified as rejected, (UR). The detected results reported for FOSA in remaining samples were qualified as estimated with a low bias, (J-).

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

According to the laboratory case narrative the Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) for preparation batch #320-175074 had %Rs for perfluorotetradecanoic acid (PFTeA) the quality control limits. The associated samples were re-extracted/reanalyzed. The LCSD %R for PFTeA was high in the re-extraction. Due to insufficient sample volume, further re-extraction was not performed. The laboratory only reported results for PFTeA from the re-extraction because the LCS was in control for this analyte. No action was taken because the re-extracted/reanalyzed samples were qualified for laboratory method blank contamination.

NOTES

Field Reagent Blanks (FRBs) were not provided with the environmental samples.

As stated in the laboratory case narrative, due to the sporadic recovery performance for the surrogate 13C8-FOSA, the laboratory temporarily increased the reporting limit for the target analyte FOSA in order to provide better confidence in its reported value. The reporting limit for FOSA has been increased to the same concentration as that fortified into the LCS. At this concentration, the LCS demonstrated an improvement in FOSA %Rs. Thus, indicating sufficient analytical performance to support this RL increase.

The concentrations of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) exceeded the instrument calibration range in sample TP-PFC-019-TPI. The sample was reanalyzed at a 10X dilution. The results for these compounds from the dilution were used in the data validation.

All samples were extracted 14 days after collection. No qualifications were required.

TO: J. ORIENT
SDGs: 320-29732-1

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Detected results reported below the Limit of Quantitation (LOQ) but above the Detection Limit (DL) were qualified as estimated, (J). Non-detected results are reported to the Limit of Detection (LOD).

EXECUTIVE SUMMARY

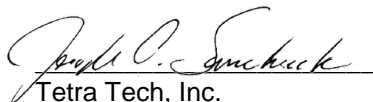
Laboratory Performance: Contaminants were detected in the laboratory method blanks. Surrogate spike %Rs were low for 13C8-FOSA. A LCS/LCSD analyses has %Rs above the upper quality control limits for PFTeA. Reporting limits for FOSA were elevated due to the sporadic recovery of 13C8-FOSA.

Other Factors Affecting Data Quality: One sample was further diluted. Detected results below the LOQ were estimated.

The data for these analyses were reviewed with reference to the EPA New England Environmental Data Review Supplement for Regional Data Review Elements Superfund Guidance/Procedures (April 2013), National Functional Guidelines for Organic Data Validation (January 2017), and the Department of Defense (DoD) document entitled, "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013). The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Michelle L. Allen
Environmental Chemist



Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:

Appendix A - Qualified Analytical Results
Appendix B - Results as reported by the Laboratory
Appendix C - Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

| | |
|-----------|--|
| U | The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method. |
| J | The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit). |
| J+ | The result is an estimated quantity, but the result may be biased high. |
| J- | The result is an estimated quantity, but the result may be biased low. |
| UJ | The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise. |
| R | The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample. |
| UR | The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample. |

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
- C01 = GC/MS Tuning Noncompliance
- D = MS/MSD Recovery Noncompliance
- E = LCS/LCSD Recovery Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
- K = ICP Interference - includes ICS % R Noncompliance
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation Noncompliance
- N = Internal Standard Noncompliance
- N01 = Internal Standard Recovery Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = RPD between columns/detectors $>40\%$ for positive results determined via GC/HPLC
- V = Non-linear calibrations; correlation coefficient $r < 0.995$
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $<30\%$
- Z = Uncertainty at 2 standard deviations is greater than sample activity
- Z1 = Tentatively Identified Compound considered presumptively present
- Z2 = Tentatively Identified Compound column bleed
- Z3 = Tentatively Identified Compound aldol condensate
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

| PROJ_NO: 08005-WE21 SDG: 320-29732-1 FRACTION: PFAS MEDIA: WATER | NSAMPLE | TP-PFC-019-MID-CARBON | | | TP-PFC-019-MID-CARBON-RE | | | TP-PFC-019-TPE | | | TP-PFC-019-TPE-D | | |
|---|------------|-----------------------|------|--------|--------------------------|------|--------|----------------|------|--------|------------------|------|--|
| | LAB_ID | 320-29732-2 | | | 320-29732-2 | | | 320-29732-3 | | | 320-29732-4 | | |
| | SAMP_DATE | 7/6/2017 | | | 7/6/2017 | | | 7/6/2017 | | | 7/6/2017 | | |
| | QC_TYPE | NM | | | NM | | | NM | | | NM | | |
| | UNITS | NG/L | | | NG/L | | | NG/L | | | NG/L | | |
| | PCT_SOLIDS | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| | DUP_OF | | | | | | | | | | TP-PFC-019-TPE | | |
| PARAMETER | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | |
| PENTADECAFLUOROOCCTANOIC ACID | 2 | U | | | | | 0.76 | J | P | 1.9 | U | | |
| PERFLUOROBUTANESULFONIC ACID | 2 | U | | | | | 1.9 | U | | 1.9 | U | | |
| PERFLUOROBUTANOIC ACID | 100 | | | | | | 85 | | | 82 | | | |
| PERFLUORODECANE SULFONIC ACID | 3 | U | | | | | 2.9 | U | | 2.9 | U | | |
| PERFLUORODECANOIC ACID | 1 | U | | | | | 0.96 | U | | 0.97 | U | | |
| PERFLUORODODECANOIC ACID | 2 | U | | | | | 1.9 | U | | 1.9 | U | | |
| PERFLUOROHEPTANESULFONIC ACID | 2 | U | | | | | 1.9 | U | | 1.9 | U | | |
| PERFLUOROHEPTANOIC ACID | 2 | U | | | | | 1.9 | U | | 1.9 | U | | |
| PERFLUOROHEXANESULFONIC ACID | 2 | U | | | | | 1.9 | U | | 1.9 | U | | |
| PERFLUOROHEXANOIC ACID | 1.2 | J | P | | | | 6.1 | | | 6.4 | | | |
| PERFLUORONONANOIC ACID | 2 | U | | | | | 1.9 | U | | 1.9 | U | | |
| PERFLUOROOCTANE SULFONAMIDE | 2.5 | J- | PR | | | | 2.1 | J- | PR | 1.9 | UR | R | |
| PERFLUOROOCTANE SULFONIC ACID | 3 | U | | | | | 2.9 | U | | 2.9 | U | | |
| PERFLUOROPENTANOIC ACID | 16 | | | | | | 24 | | | 24 | | | |
| PERFLUOROTETRADECANOIC ACID | | | | 1.4 | U | A | | | | 0.97 | U | | |
| PERFLUOROTRIDECANOIC ACID | 2 | U | | | | | 1.9 | U | | 1.9 | U | | |
| PERFLUOROUNDECANOIC ACID | 2 | U | | | | | 1.9 | U | | 1.9 | U | | |

| | | | | | | | | | | | | | |
|---|------------|-------------------|------|--------|----------------|------|--------|-------------------|------|--------|-------------------|------|--|
| PROJ_NO: 08005-WE21 SDG: 320-29732-1 FRACTION: PFAS MEDIA: WATER | NSAMPLE | TP-PFC-019-TPE-RE | | | TP-PFC-019-TPI | | | TP-PFC-019-TPI-DL | | | TP-PFC-019-TPI-RE | | |
| | LAB_ID | 320-29732-3 | | | 320-29732-1 | | | 320-29732-1 | | | 320-29732-1 | | |
| | SAMP_DATE | 7/6/2017 | | | 7/6/2017 | | | 7/6/2017 | | | 7/6/2017 | | |
| | QC_TYPE | NM | | | NM | | | NM | | | NM | | |
| | UNITS | NG/L | | | NG/L | | | NG/L | | | NG/L | | |
| | PCT_SOLIDS | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| | DUP_OF | | | | | | | | | | | | |
| PARAMETER | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | |
| PENTADECAFLUOROOCCTANOIC ACID | | | | | | | 1500 | | | | | | |
| PERFLUOROBUTANESULFONIC ACID | | | | 52 | | | | | | | | | |
| PERFLUOROBUTANOIC ACID | | | | 77 | | | | | | | | | |
| PERFLUORODECANE SULFONIC ACID | | | | 2.9 U | | | | | | | | | |
| PERFLUORODECANOIC ACID | | | | 1.1 J | P | | | | | | | | |
| PERFLUORODODECANOIC ACID | | | | 2 U | | | | | | | | | |
| PERFLUOROHEPTANESULFONIC ACID | | | | 9 | | | | | | | | | |
| PERFLUOROHEPTANOIC ACID | | | | 66 | | | | | | | | | |
| PERFLUOROHEXANESULFONIC ACID | | | | 350 | | | | | | | | | |
| PERFLUOROHEXANOIC ACID | | | | 350 | | | | | | | | | |
| PERFLUORONONANOIC ACID | | | | 2.3 J | P | | | | | | | | |
| PERFLUOROOCTANE SULFONAMIDE | | | | 1.1 J- | PR | | | | | | | | |
| PERFLUOROOCTANE SULFONIC ACID | | | | | | | 360 | | | | | | |
| PERFLUOROPENTANOIC ACID | | | | 180 | | | | | | | | | |
| PERFLUOROTETRADECANOIC ACID | 1.5 U | | A | | | | | | | 1.6 U | | A | |
| PERFLUOROTRIDECANOIC ACID | | | | 2 U | | | | | | | | | |
| PERFLUOROUNDECANOIC ACID | | | | 2 U | | | | | | | | | |

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPI Lab Sample ID: 320-29732-1
 Matrix: Water Lab File ID: 2017.07.23A_016.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 256.3 (mL) Date Analyzed: 07/23/2017 16:16
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|------|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 77 | M | 2.4 | 0.98 | 0.45 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 180 | | 2.4 | 2.0 | 0.96 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 350 | | 2.4 | 2.0 | 0.77 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 66 | | 2.4 | 2.0 | 0.78 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 1300 | M E | 2.4 | 2.0 | 0.73 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 2.3 | J | 2.4 | 2.0 | 0.64 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1.1 | J | 2.4 | 0.98 | 0.43 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.4 | 2.0 | 0.73 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.4 | 2.0 | 0.57 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 2.0 | U | 2.4 | 2.0 | 0.54 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 52 | | 2.4 | 2.0 | 0.90 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 350 | | 2.4 | 2.0 | 0.85 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 9.0 | | 2.4 | 2.0 | 0.70 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 370 | E | 3.9 | 2.9 | 1.2 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 2.9 | U | 3.9 | 2.9 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 1.1 | J | 39 | 2.0 | 0.62 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPI Lab Sample ID: 320-29732-1
 Matrix: Water Lab File ID: 2017.07.23A_016.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 256.3 (mL) Date Analyzed: 07/23/2017 16:16
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 14 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 77 | | 25-150 |
| STL00993 | 13C2 PFHxA | 71 | | 25-150 |
| STL00990 | 13C4 PFOA | 67 | | 25-150 |
| STL00995 | 13C5 PFNA | 66 | | 25-150 |
| STL00996 | 13C2 PFDA | 65 | | 25-150 |
| STL00997 | 13C2 PFUnA | 48 | | 25-150 |
| STL00998 | 13C2 PFDoA | 45 | | 25-150 |
| STL00994 | 18O2 PFHxS | 87 | | 25-150 |
| STL00991 | 13C4 PFOS | 83 | | 25-150 |
| STL01892 | 13C4-PFHpA | 93 | | 25-150 |
| STL01893 | 13C5 PFPeA | 80 | | 25-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPI RE Lab Sample ID: 320-29732-1 RE
 Matrix: Water Lab File ID: 2017.07.25B_009.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11
 Extraction Method: 3535 Date Extracted: 07/20/2017 09:15
 Sample wt/vol: 258 (mL) Date Analyzed: 07/25/2017 15:05
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175951 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|-------------------------------------|--------|-------|-----|------|------|
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 1.6 | J M Q | 2.4 | 0.97 | 0.39 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00998 | 13C2 PFDaA | 67 | | 25-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPI DL Lab Sample ID: 320-29732-1 DL
 Matrix: Water Lab File ID: 2017.07.24AA_029.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 256.3 (mL) Date Analyzed: 07/24/2017 20:07
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 10
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175757 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|-----|-----|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 80 | D | 24 | 9.8 | 4.5 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 190 | D | 24 | 20 | 9.6 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 350 | D | 24 | 20 | 7.7 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 70 | D | 24 | 20 | 7.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 1500 | D M | 24 | 20 | 7.3 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 6.4 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 4.8 | J D | 24 | 9.8 | 4.3 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 20 | U | 24 | 20 | 7.3 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 20 | U | 24 | 20 | 5.7 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 5.6 | J D | 24 | 20 | 5.4 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 55 | D | 24 | 20 | 9.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 360 | D | 24 | 20 | 8.5 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 12 | J D | 24 | 20 | 7.0 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 360 | D | 39 | 29 | 12 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 29 | U | 39 | 29 | 12 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 18 | J D | 390 | 20 | 6.2 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPI DL Lab Sample ID: 320-29732-1 DL
 Matrix: Water Lab File ID: 2017.07.24AA_029.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 256.3 (mL) Date Analyzed: 07/24/2017 20:07
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 10
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175757 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 15 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 98 | | 25-150 |
| STL00993 | 13C2 PFHxA | 94 | | 25-150 |
| STL00990 | 13C4 PFOA | 88 | | 25-150 |
| STL00995 | 13C5 PFNA | 77 | | 25-150 |
| STL00996 | 13C2 PFDA | 62 | | 25-150 |
| STL00997 | 13C2 PFUnA | 54 | | 25-150 |
| STL00998 | 13C2 PFDoA | 47 | | 25-150 |
| STL00994 | 18O2 PFHxS | 96 | | 25-150 |
| STL00991 | 13C4 PFOS | 82 | | 25-150 |
| STL01892 | 13C4-PFHpA | 105 | | 25-150 |
| STL01893 | 13C5 PFPeA | 95 | | 25-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-MID-CARBON Lab Sample ID: 320-29732-2
 Matrix: Water Lab File ID: 2017.07.24AA_030.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250.8 (mL) Date Analyzed: 07/24/2017 20:14
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175757 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|-----|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 100 | | 2.5 | 1.0 | 0.46 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 16 | | 2.5 | 2.0 | 0.99 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 1.2 | J | 2.5 | 2.0 | 0.78 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 2.0 | U M | 2.5 | 2.0 | 0.80 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 2.0 | U M | 2.5 | 2.0 | 0.75 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 2.0 | U | 2.5 | 2.0 | 0.65 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1.0 | U | 2.5 | 1.0 | 0.44 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.5 | 2.0 | 0.75 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.5 | 2.0 | 0.58 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 2.0 | U | 2.5 | 2.0 | 0.55 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 2.0 | U | 2.5 | 2.0 | 0.92 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 2.0 | U | 2.5 | 2.0 | 0.87 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 2.0 | U | 2.5 | 2.0 | 0.71 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 3.0 | U | 4.0 | 3.0 | 1.3 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 3.0 | U | 4.0 | 3.0 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.5 | J | 40 | 2.0 | 0.64 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-MID-CARBON Lab Sample ID: 320-29732-2
 Matrix: Water Lab File ID: 2017.07.24AA_030.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250.8 (mL) Date Analyzed: 07/24/2017 20:14
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175757 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 6 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 101 | | 25-150 |
| STL00993 | 13C2 PFHxA | 100 | | 25-150 |
| STL00990 | 13C4 PFOA | 102 | | 25-150 |
| STL00995 | 13C5 PFNA | 81 | | 25-150 |
| STL00996 | 13C2 PFDA | 72 | | 25-150 |
| STL00997 | 13C2 PFUnA | 63 | | 25-150 |
| STL00998 | 13C2 PFDoA | 58 | | 25-150 |
| STL00994 | 18O2 PFHxS | 102 | | 25-150 |
| STL00991 | 13C4 PFOS | 99 | | 25-150 |
| STL01892 | 13C4-PFHpA | 116 | | 25-150 |
| STL01893 | 13C5 PFPeA | 102 | | 25-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-MID-CARBON RE Lab Sample ID: 320-29732-2 RE
 Matrix: Water Lab File ID: 2017.07.25B_010.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16
 Extraction Method: 3535 Date Extracted: 07/20/2017 09:15
 Sample wt/vol: 252 (mL) Date Analyzed: 07/25/2017 15:12
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175951 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|-------------------------------------|--------|-------|-----|------|------|
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 1.4 | J M Q | 2.5 | 0.99 | 0.40 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00998 | 13C2 PFD0A | 92 | | 25-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE Lab Sample ID: 320-29732-3
 Matrix: Water Lab File ID: 2017.07.23A_018.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 259.5 (mL) Date Analyzed: 07/23/2017 16:30
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|------|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 85 | | 2.4 | 0.96 | 0.44 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 24 | | 2.4 | 1.9 | 0.95 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 6.1 | | 2.4 | 1.9 | 0.76 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 1.9 | U | 2.4 | 1.9 | 0.77 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 0.76 | J M | 2.4 | 1.9 | 0.72 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 1.9 | U | 2.4 | 1.9 | 0.63 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 0.96 | U | 2.4 | 0.96 | 0.42 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 1.9 | U | 2.4 | 1.9 | 0.72 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 1.9 | U | 2.4 | 1.9 | 0.56 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 1.9 | U | 2.4 | 1.9 | 0.53 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 1.9 | U | 2.4 | 1.9 | 0.88 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 1.9 | U | 2.4 | 1.9 | 0.84 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 1.9 | U | 2.4 | 1.9 | 0.69 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 2.9 | U | 3.9 | 2.9 | 1.2 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 2.9 | U | 3.9 | 2.9 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.1 | J | 39 | 1.9 | 0.61 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE Lab Sample ID: 320-29732-3
 Matrix: Water Lab File ID: 2017.07.23A_018.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 259.5 (mL) Date Analyzed: 07/23/2017 16:30
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 2 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 102 | | 25-150 |
| STL00993 | 13C2 PFHxA | 101 | | 25-150 |
| STL00990 | 13C4 PFOA | 102 | | 25-150 |
| STL00995 | 13C5 PFNA | 85 | | 25-150 |
| STL00996 | 13C2 PFDA | 93 | | 25-150 |
| STL00997 | 13C2 PFUnA | 78 | | 25-150 |
| STL00998 | 13C2 PFDoA | 69 | | 25-150 |
| STL00994 | 18O2 PFHxS | 105 | | 25-150 |
| STL00991 | 13C4 PFOS | 102 | | 25-150 |
| STL01892 | 13C4-PFHpA | 118 | | 25-150 |
| STL01893 | 13C5 PFPeA | 98 | | 25-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE RE Lab Sample ID: 320-29732-3 RE
 Matrix: Water Lab File ID: 2017.07.25B_011.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21
 Extraction Method: 3535 Date Extracted: 07/20/2017 09:15
 Sample wt/vol: 254.6 (mL) Date Analyzed: 07/25/2017 15:19
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175951 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|-------------------------------------|--------|-------|-----|------|------|
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 1.5 | J M Q | 2.5 | 0.98 | 0.39 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00998 | 13C2 PFDaA | 87 | | 25-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE-D Lab Sample ID: 320-29732-4
 Matrix: Water Lab File ID: 2017.07.21C_019.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 258.4 (mL) Date Analyzed: 07/21/2017 21:06
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|------|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 82 | | 2.4 | 0.97 | 0.44 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 24 | | 2.4 | 1.9 | 0.96 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 6.4 | | 2.4 | 1.9 | 0.76 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 1.9 | U | 2.4 | 1.9 | 0.78 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 1.9 | U M | 2.4 | 1.9 | 0.72 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 1.9 | U | 2.4 | 1.9 | 0.63 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 0.97 | U | 2.4 | 0.97 | 0.43 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 1.9 | U | 2.4 | 1.9 | 0.72 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 1.9 | U | 2.4 | 1.9 | 0.57 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 1.9 | U | 2.4 | 1.9 | 0.53 |
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 0.97 | U | 2.4 | 0.97 | 0.39 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 1.9 | U | 2.4 | 1.9 | 0.89 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 1.9 | U | 2.4 | 1.9 | 0.84 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 1.9 | U | 2.4 | 1.9 | 0.69 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 2.9 | U | 3.9 | 2.9 | 1.2 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 2.9 | U | 3.9 | 2.9 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 1.9 | U | 39 | 1.9 | 0.62 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE-D Lab Sample ID: 320-29732-4
 Matrix: Water Lab File ID: 2017.07.21C_019.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 258.4 (mL) Date Analyzed: 07/21/2017 21:06
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 0.3 | Q | 25-150 |
| STL00992 | 13C4 PFBA | 96 | | 25-150 |
| STL00993 | 13C2 PFHxA | 98 | | 25-150 |
| STL00990 | 13C4 PFOA | 111 | | 25-150 |
| STL00995 | 13C5 PFNA | 91 | | 25-150 |
| STL00996 | 13C2 PFDA | 85 | | 25-150 |
| STL00997 | 13C2 PFUnA | 67 | | 25-150 |
| STL00998 | 13C2 PFDoA | 70 | | 25-150 |
| STL00994 | 18O2 PFHxS | 106 | | 25-150 |
| STL00991 | 13C4 PFOS | 100 | | 25-150 |
| STL01892 | 13C4-PFHpA | 118 | | 25-150 |
| STL01893 | 13C5 PFPeA | 98 | | 25-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: TP-PFC-019-TPE-D RE Lab Sample ID: 320-29732-4 RE
 Matrix: Water Lab File ID: 2017.07.27C_014.d
 Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00
 Extraction Method: 3535 Date Extracted: 07/25/2017 09:58
 Sample wt/vol: 245.5 (mL) Date Analyzed: 07/27/2017 22:18
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 176487 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|------------------------------------|--------|-----|-----|-----|------|
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.0 | U H | 41 | 2.0 | 0.65 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 2 | Q | 25-150 |

APPENDIX C

SUPPORT DOCUMENTATION

| ANALYTE | ORIGINAL | DUPLICATE | RL | RPD | RPD > 30% |
|--------------------------------|----------|-----------|-----|-------|-----------|
| PENTADEC AFLUORO OCTANOIC ACID | 0.76 | 1.9 | 2.4 | 85.71 | TRUE |
| PERFLUOROBUTANOIC ACID | 85 | 82 | 2.4 | 3.59 | FALSE |
| PERFLUOROHXANOIC ACID | 6.1 | 6.4 | 2.4 | 4.80 | FALSE |
| PERFLUORO OCTANE SULFONAMIDE | 2.1 | 1.9 | 39 | 10.00 | FALSE |
| PERFLUOROPENTANOIC ACID | 24 | 24 | 2.4 | 0.00 | FALSE |
| PERFLUOROTETRADECANOIC ACID | 1.5 | 0.97 | 2.4 | 42.91 | TRUE |

| ORIGINAL SAMPLE CONC >2xRL | DUPLICATE SAMPLE CONC >2xRL | DIFFERENCE >2xRL |
|----------------------------|-----------------------------|------------------|
| FALSE | FALSE | FALSE |
| TRUE | TRUE | FALSE |
| TRUE | TRUE | FALSE |
| FALSE | FALSE | FALSE |
| TRUE | TRUE | FALSE |
| FALSE | FALSE | FALSE |

SDG 320-29732-1

TP-PFC-019-TPE/TP-PFC-019-TPE-D

NAS BRUNSWICK
SDG 320-29732-1

SAMPLE IDENTIFICATION

TP-PFC-019-TPI

COMPOUND

PENTADECAFLUOROOCCTANOIC ACID

| | |
|----------------------------------|--------------|
| COMPOUND AREA | 5991551 |
| INTERNAL STANDARD AMOUNT (ng/ml) | 5 |
| DILUTION FACTOR | 10 |
| INTERNAL STANDARD AREA | 360631 |
| AVERAGE RRF | 1.067 |
| SAMPLE VOLUME (ml) | 256.3 |
| VOLUME EXTRACT (ml) | 0.5 |
| VOLUME INJECTED (μ l) | 1 |
| ml to L | 1000 |
| CONCENTRATION = | 1518.81 ng/L |

$5991551 \times 5\text{ng/ml} \times 1000\text{ml} \times 0.5\text{ml} \times 10 / (360631 \times 1.067 \times 256.3\text{ml} \times 1\mu\text{l} \times 1\text{L})$

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_029.d
 Lims ID: 320-29732-C-1-A
 Client ID: TP-PFC-019-TPI
 Sample Type: Client
 Inject. Date: 24-Jul-2017 20:07:48 ALS Bottle#: 21 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 10.0000
 Sample Info: 320-29732-c-1-a 10X
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 25-Jul-2017 11:29:47 Calib Date: 23-Jul-2017 13:58:26
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 11:27:51

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|--------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|-------|
| 2 Perfluorobutyric acid | | | | | | | | | | |
| 212.90 > 169.00 | 1.556 | 1.547 | 0.009 | 1.000 | 547520 | 4.08 | | | 226 | |
| D 1 13C4 PFBA | | | | | | | | | | |
| 217.00 > 172.00 | 1.556 | 1.547 | 0.009 | | 760862 | 4.88 | | 9.8 | 7568 | |
| 4 Perfluoropentanoic acid | | | | | | | | | | |
| 262.90 > 219.00 | 1.766 | 1.756 | 0.010 | 1.000 | 1086642 | 9.91 | | | 574 | |
| D 3 13C5-PFPeA | | | | | | | | | | |
| 267.90 > 223.00 | 1.766 | 1.756 | 0.010 | | 525883 | 4.76 | | 9.5 | 10402 | |
| 5 Perfluorobutanesulfonic acid | | | | | | | | | | |
| 298.90 > 80.00 | 1.793 | 1.784 | 0.009 | 1.000 | 554719 | 2.82 | | | 346 | |
| 298.90 > 99.00 | 1.784 | 1.784 | 0.0 | 0.995 | 222940 | | 2.49(0.00-0.00) | | 318 | |
| 6 Perfluorohexanoic acid | | | | | | | | | | |
| 313.00 > 269.00 | 2.032 | 2.032 | 0.0 | 1.000 | 1614537 | 17.8 | | | 2779 | |
| D 7 13C2 PFHxA | | | | | | | | | | |
| 315.00 > 270.00 | 2.032 | 2.032 | 0.0 | | 477398 | 4.72 | | 9.4 | 11834 | |
| 10 Perfluoroheptanoic acid | | | | | | | | | | |
| 363.00 > 319.00 | 2.375 | 2.366 | 0.009 | 1.000 | 324104 | 3.57 | | | 708 | |
| D 9 13C4-PFHpA | | | | | | | | | | |
| 367.00 > 322.00 | 2.375 | 2.366 | 0.009 | | 441714 | 5.27 | | 10.5 | 12586 | |
| 8 Perfluorohexanesulfonic acid | | | | | | | | | | |
| 399.00 > 80.00 | 2.391 | 2.382 | 0.009 | 1.000 | 2643650 | 18.5 | | | 2210 | |
| D 11 18O2 PFHxS | | | | | | | | | | |
| 403.00 > 84.00 | 2.383 | 2.382 | 0.001 | | 624754 | 4.55 | | 9.6 | 16027 | |
| * 62 13C2-PFOA | | | | | | | | | | |
| 415.00 > 370.00 | 2.735 | 2.725 | 0.010 | | 12685 | 50.0 | | | 354 | |
| 15 Perfluorooctanoic acid | | | | | | | | | | |
| 413.00 > 369.00 | 2.735 | 2.733 | 0.002 | 1.000 | 5991551 | 77.9 | | | 1993 | M |
| 413.00 > 169.00 | 2.735 | 2.733 | 0.002 | 1.000 | 3754663 | | 1.60(0.90-1.10) | | 12098 | M |

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | %Rec | S/N | Flags |
|----------------------------------|-------|--------|--------|--------|----------|--------------|------------------|------|------|-------|
| D 14 13C4 PFOA | | | | | | | | | | |
| 417.00 > 372.00 | 2.735 | 2.733 | 0.002 | | 360631 | 4.39 | | 8.8 | 9723 | |
| 16 Perfluoroheptanesulfonic Acid | | | | | | | | | | |
| 449.00 > 80.00 | 2.742 | 2.740 | 0.002 | 1.000 | 60564 | 0.6049 | | | 195 | |
| 17 Perfluorooctane sulfonic acid | | | | | | | | | | |
| 499.00 > 80.00 | 3.115 | 3.108 | 0.007 | 1.000 | 1727470 | 18.3 | | | 6890 | |
| 499.00 > 99.00 | 3.115 | 3.108 | 0.007 | 1.000 | 380229 | | 4.54(0.90-1.10) | | 2262 | |
| 20 Perfluorononanoic acid | | | | | | | | | | |
| 463.00 > 419.00 | 3.115 | 3.108 | 0.007 | 1.000 | 16315 | 0.3151 | | | 35.5 | |
| D 19 13C5 PFNA | | | | | | | | | | |
| 468.00 > 423.00 | 3.115 | 3.108 | 0.007 | | 254288 | 3.87 | | 7.7 | 5060 | |
| D 18 13C4 PFOS | | | | | | | | | | |
| 503.00 > 80.00 | 3.115 | 3.108 | 0.007 | | 426674 | 3.94 | | 8.2 | 8521 | |
| 22 Perfluorooctane Sulfonamide | | | | | | | | | | |
| 498.00 > 78.00 | 3.473 | 3.457 | 0.016 | 1.000 | 22254 | 0.9087 | | | 238 | |
| D 21 13C8 FOSA | | | | | | | | | | |
| 506.00 > 78.00 | 3.473 | 3.457 | 0.016 | | 135773 | 0.7427 | | 1.5 | 1415 | |
| 24 Perfluorodecanoic acid | | | | | | | | | | |
| 513.00 > 469.00 | 3.482 | 3.467 | 0.015 | 1.000 | 8273 | 0.2447 | | | 43.9 | |
| D 23 13C2 PFDA | | | | | | | | | | |
| 515.00 > 470.00 | 3.482 | 3.467 | 0.015 | | 172546 | 3.09 | | 6.2 | 2087 | |
| 29 Perfluorodecane Sulfonic acid | | | | | | | | | | |
| 599.00 > 80.00 | 3.795 | 3.778 | 0.017 | 1.000 | 9113 | 0.1640 | | | 306 | |
| 31 Perfluoroundecanoic acid | | | | | | | | | | |
| 563.00 > 519.00 | 3.812 | 3.797 | 0.015 | 1.000 | 5697 | 0.1464 | | | 9.0 | |
| D 30 13C2 PFUnA | | | | | | | | | | |
| 565.00 > 520.00 | 3.812 | 3.797 | 0.015 | | 110145 | 2.70 | | 5.4 | 1266 | |
| 37 Perfluorododecanoic acid | | | | | | | | | | |
| 613.00 > 569.00 | 4.108 | 4.095 | 0.013 | 1.000 | 4865 | 0.2515 | | | 16.3 | |
| D 36 13C2 PFDaA | | | | | | | | | | |
| 615.00 > 570.00 | 4.108 | 4.095 | 0.013 | | 104109 | 2.33 | | 4.7 | 330 | |
| 41 Perfluorotridecanoic acid | | | | | | | | | | |
| 663.00 > 619.00 | 4.376 | 4.358 | 0.018 | 1.000 | 5052 | 0.2850 | | | 12.3 | |
| 42 Perfluorotetradecanoic acid | | | | | | | | | | |
| 712.50 > 668.90 | 4.633 | 4.596 | 0.037 | 1.000 | 27339 | 0.6831 | | | 7.1 | M |
| 713.00 > 169.00 | 4.612 | 4.596 | 0.016 | 0.996 | 2016 | | 13.56(0.00-0.00) | | 92.0 | M |

QC Flag Legend

Review Flags

M - Manually Integrated

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-29732-1

Login Number: 29732
List Number: 1
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

| Question | Answer | Comment |
|--|---------------|----------------|
| Radioactivity wasn't checked or is \leq background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | N/A | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

**Job Narrative
320-29732-1**

Receipt

The samples were received on 7/7/2017 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.4° C.

LCMS

Method(s) 537 (Modified): The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 3535, 537 (Modified): Due to the sporadic recovery performance for the labeled analyte 13C8-FOSA, we are temporarily increasing the reporting limit (RL) for the target analyte FOSA in order to provide better confidence in its reported value. The RL for FOSA has been increased to the same concentration as that fortified into the laboratory control sample (LCS). At this concentration, the LCS demonstrates acceptable FOSA recovery regardless of the recovery of its labeled analog, 13C8-FOSA, which is used to quantitate FOSA. Thus, indicating sufficient analytical performance to support this RL increase. Techniques to improve the recovery performance of 13C8-FOSA are currently underway.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: (LCS 320-174599/2-A) and (LCSD 320-174599/3-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. Reanalysis confirms these results.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPI (320-29732-1), TP-PFC-019-MID-CARBON (320-29732-2), TP-PFC-019-TPE (320-29732-3) and (LCS 320-175097/2-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. Reanalysis confirms the results.

Method(s) 537 (Modified): The laboratory control sample duplicate (LCSD) for preparation batch 320-175074 and analytical batch 320-175951 recovered outside control limits for the following analyte: Perfluorotetradecanoic acid (PFTeA). This analyte was detected in the associated samples. The samples were re-extracted, however, PFTeA in the re-extracted LCSD was also outside of control limits. Due to insufficient sample volume, further re-extraction could not be performed. Results for PFTeA were reported from the re-extraction because the Laboratory Control Sample (LCS) was in control for this analyte.

Method(s) 537 (Modified): The concentration of Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) associated with the following sample exceeded the instrument calibration range: TP-PFC-019-TPI (320-29732-1). These analytes have been qualified; however, the peaks did not saturate the instrument detector. The sample was run at dilution and both sets of data have been reported.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPE-D (320-29732-4). Reanalysis confirmed the result. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. All detection limits are below the lower calibration.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is far below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPE-D (320-29732-4). The sample was re-extracted outside of the recommended preparation holding time. Both sets of data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 3535: Approximately 250 mL of the aqueous portion of the following samples were decanted into a new polyethylene bottle prior to extraction due to the original sample bottle containing an excess amount of sediment which had the potential to clog the solid-phase column: TP-PFC-019-TPI (320-29732-1)

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-175074.

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-175742.

Method(s) 3535: The following sample was re-prepared outside of preparation holding time due to low FOSA IDA recoveries.: TP-PFC-019-TPE-D (320-29732-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Qualifiers

LCMS

| Qualifier | Qualifier Description |
|-----------|---|
| Q | One or more quality control criteria failed. |
| M | Manual integrated compound. |
| U | Undetected at the Limit of Detection. |
| J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| E | Result exceeded calibration range. |
| D | The reported value is from a dilution. |
| H | Sample was prepped or analyzed beyond the specified holding time |

Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|----------------|---|
| α | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|----------------------|-------------------------|---------------|------------------|-----------------|
| 320-29732-1 | TP-PFC-019-TPI | Water | 07/06/17 09:11 | 07/07/17 10:00 |
| 320-29732-2 | TP-PFC-019-MID-CARBON | Water | 07/06/17 09:16 | 07/07/17 10:00 |
| 320-29732-3 | TP-PFC-019-TPE | Water | 07/06/17 09:21 | 07/07/17 10:00 |
| 320-29732-4 | TP-PFC-019-TPE-D | Water | 07/06/17 00:00 | 07/07/17 10:00 |

Method Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

| Method | Method Description | Protocol | Laboratory |
|----------------|-----------------------------|-----------------|-------------------|
| 537 (Modified) | Perfluorinated Hydrocarbons | EPA | TAL SAC |

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFBA # | PFPeA # | PFHxA # | PFHpA # | PFHxS # | PFOA # | PFNA # | PFOS # |
|------------------|------------------------|--------|---------|---------|---------|---------|--------|--------|--------|
| TP-PFC-019-TPE-D | 320-29732-4 | 96 | 98 | 98 | 118 | 106 | 111 | 91 | 100 |
| | MB 320-174599/1-A | 113 | 112 | 115 | 148 | 111 | 136 | 123 | 105 |
| | LCS 320-174599/2-A | 100 | 101 | 102 | 135 | 97 | 119 | 109 | 93 |
| | LCSD 320-174599/3-A | 97 | 101 | 105 | 132 | 97 | 125 | 111 | 96 |

PFBA = 13C4 PFBA
 PFPeA = 13C5 PFPeA
 PFHxA = 13C2 PFHxA
 PFHpA = 13C4-PFHpA
 PFHxS = 18O2 PFHxS
 PFOA = 13C4 PFOA
 PFOS = 13C4 PFOS
 PFNA = 13C5 PFNA

QC LIMITS

25-150
 25-150
 25-150
 25-150
 25-150
 25-150
 25-150
 25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFDA # | PFOSA # | PFUnA # | PFDoA # |
|------------------|------------------------|--------|---------|---------|---------|
| TP-PFC-019-TPE-D | 320-29732-4 | 85 | 0.3 | 67 | 70 |
| | MB 320-174599/1-A | 138 | 47 | 137 | 114 |
| | LCS 320-174599/2-A | 126 | 17 | 110 | 97 |
| | LCSD 320-174599/3-A | 128 | 20 | 117 | 101 |

PFDA = 13C2 PFDA
PFOSA = 13C8 FOSA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA

QC LIMITS
25-150
25-150
25-150
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFBA # | PFPeA # | PFHxA # | PFHpA # | PFHxS # | PFOA # | PFNA # | PFOS # |
|---------------------------|------------------------|--------|---------|---------|---------|---------|--------|--------|--------|
| TP-PFC-019-TPI | 320-29732-1 | 77 | 80 | 71 | 93 | 87 | 67 | 66 | 83 |
| TP-PFC-019-TPI DL | 320-29732-1 DL | 98 | 95 | 94 | 105 | 96 | 88 | 77 | 82 |
| TP-PFC-019-MID-CAR BON | 320-29732-2 | 101 | 102 | 100 | 116 | 102 | 102 | 81 | 99 |
| TP-PFC-019-TPE | 320-29732-3 | 102 | 98 | 101 | 118 | 105 | 102 | 85 | 102 |
| | MB 320-175097/1-A | 103 | 105 | 100 | 114 | 96 | 110 | 102 | 93 |
| | LCS 320-175097/2-A | 101 | 102 | 100 | 119 | 101 | 113 | 98 | 94 |
| | LCSD 320-175097/3-A | 111 | 104 | 105 | 124 | 108 | 116 | 105 | 95 |

| | <u>QC LIMITS</u> |
|--------------------|------------------|
| PFBA = 13C4 PFBA | 25-150 |
| PFPeA = 13C5 PFPeA | 25-150 |
| PFHxA = 13C2 PFHxA | 25-150 |
| PFHpA = 13C4-PFHpA | 25-150 |
| PFHxS = 1802 PFHxS | 25-150 |
| PFOA = 13C4 PFOA | 25-150 |
| PFOS = 13C4 PFOS | 25-150 |
| PFNA = 13C5 PFNA | 25-150 |

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFOSA # | PFDA # | PFUnA # | PFDoA # |
|---------------------------|------------------------|---------|--------|---------|---------|
| TP-PFC-019-TPI | 320-29732-1 | 14 Q | 65 | 48 | 45 |
| TP-PFC-019-TPI DL | 320-29732-1 DL | 15 Q | 62 | 54 | 47 |
| TP-PFC-019-MID-CAR BON | 320-29732-2 | 6 Q | 72 | 63 | 58 |
| TP-PFC-019-TPE | 320-29732-3 | 2 Q | 93 | 78 | 69 |
| | MB 320-175097/1-A | 51 | 118 | 98 | 84 |
| | LCS 320-175097/2-A | 7 Q | 120 | 104 | 86 |
| | LCSD 320-175097/3-A | 25 | 128 | 104 | 94 |

PFOSA = 13C8 FOSA
 PFDA = 13C2 PFDA
 PFUnA = 13C2 PFUnA
 PFDoA = 13C2 PFDoA

QC LIMITS
 25-150
 25-150
 25-150
 25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFDa # |
|------------------------------|------------------------|--------|
| TP-PFC-019-TPI RE | 320-29732-1 RE | 67 |
| TP-PFC-019-MID-CAR BON RE | 320-29732-2 RE | 92 |
| TP-PFC-019-TPE RE | 320-29732-3 RE | 87 |
| | MB 320-175074/1-A | 116 |
| | LCS 320-175074/2-A | 105 |
| | LCSD 320-175074/3-A | 106 |

PFDa = 13C2 PFDa

QC LIMITS
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFOSA # |
|------------------------|------------------------|---------|
| TP-PFC-019-TPE-D RE | 320-29732-4 RE | 2 |
| | MB 320-175742/1-A | 63 |
| | LCS 320-175742/2-A | 62 |
| | LCSD 320-175742/3-A | 55 |

PFOSA = 13C8 FOSA

QC LIMITS
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab File ID: 2017.07.21C_016.d Lab Sample ID: MB 320-174599/1-A
 Matrix: Water Date Extracted: 07/18/2017 07:22
 Instrument ID: A8_N Date Analyzed: 07/21/2017 20:45
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|------------------|---------------------|----------------------|------------------|
| | LCS 320-174599/2-A | 2017.07.21C 017.d | 07/21/2017 20:52 |
| | LCSD 320-174599/3-A | 2017.07.21C 018.d | 07/21/2017 20:59 |
| TP-PFC-019-TPE-D | 320-29732-4 | 2017.07.21C 019.d | 07/21/2017 21:06 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-174599/1-A
 Matrix: Water Lab File ID: 2017.07.21C_016.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 250 (mL) Date Analyzed: 07/21/2017 20:45
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|-----|-----|-----|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 1.0 | U M | 2.5 | 1.0 | 0.46 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 2.0 | U | 2.5 | 2.0 | 0.99 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 2.0 | U | 2.5 | 2.0 | 0.79 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 2.0 | U | 2.5 | 2.0 | 0.80 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 2.0 | U | 2.5 | 2.0 | 0.75 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 2.0 | U | 2.5 | 2.0 | 0.65 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1.0 | U | 2.5 | 1.0 | 0.44 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.5 | 2.0 | 0.75 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.5 | 2.0 | 0.58 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 0.631 | J | 2.5 | 2.0 | 0.55 |
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 0.711 | J M | 2.5 | 1.0 | 0.40 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 2.0 | U | 2.5 | 2.0 | 0.92 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 2.0 | U | 2.5 | 2.0 | 0.87 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 2.0 | U | 2.5 | 2.0 | 0.71 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 3.0 | U | 4.0 | 3.0 | 1.3 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 3.0 | U | 4.0 | 3.0 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.0 | U | 40 | 2.0 | 0.64 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-174599/1-A
 Matrix: Water Lab File ID: 2017.07.21C_016.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/18/2017 07:22
 Sample wt/vol: 250 (mL) Date Analyzed: 07/21/2017 20:45
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175462 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 47 | | 25-150 |
| STL00992 | 13C4 PFBA | 113 | | 25-150 |
| STL00993 | 13C2 PFHxA | 115 | | 25-150 |
| STL00990 | 13C4 PFOA | 136 | | 25-150 |
| STL00995 | 13C5 PFNA | 123 | | 25-150 |
| STL00996 | 13C2 PFDA | 138 | | 25-150 |
| STL00997 | 13C2 PFUnA | 137 | | 25-150 |
| STL00998 | 13C2 PFDoA | 114 | | 25-150 |
| STL00994 | 18O2 PFHxS | 111 | | 25-150 |
| STL00991 | 13C4 PFOS | 105 | | 25-150 |
| STL01892 | 13C4-PFHpA | 148 | | 25-150 |
| STL01893 | 13C5 PFPeA | 112 | | 25-150 |

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2017.07.21C_017.d

Lab ID: LCS 320-174599/2-A

Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|---------------------------------------|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorobutanoic acid (PFBA) | 40.0 | 44.8 | 112 | 60-140 | |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 42.2 | 106 | 60-140 | |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 42.7 | 107 | 60-140 | |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 40.6 | 102 | 60-140 | |
| Perfluorooctanoic acid (PFOA) | 40.0 | 42.1 | 105 | 60-140 | |
| Perfluorononanoic acid (PFNA) | 40.0 | 42.6 | 106 | 60-140 | |
| Perfluorodecanoic acid (PFDA) | 40.0 | 43.8 | 110 | 60-140 | |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 43.8 | 109 | 60-140 | |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 43.5 | 109 | 60-140 | |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 43.4 | 109 | 50-150 | |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 48.6 | 122 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 38.5 | 109 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 38.9 | 107 | 60-140 | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 44.7 | 117 | 50-150 | |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 40.0 | 108 | 60-140 | |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 39.6 | 103 | 50-150 | |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 42.9 | 107 | 60-140 | |
| 13C8 FOSA | 100 | 17.3 | 17 | 25-150 | Q |
| 13C4 PFBA | 100 | 99.7 | 100 | 25-150 | |
| 13C2 PFHxA | 100 | 102 | 102 | 25-150 | |
| 13C4 PFOA | 100 | 119 | 119 | 25-150 | |
| 13C5 PFNA | 100 | 109 | 109 | 25-150 | |
| 13C2 PFDA | 100 | 126 | 126 | 25-150 | |
| 13C2 PFUnA | 100 | 110 | 110 | 25-150 | |
| 13C2 PFDoA | 100 | 96.6 | 97 | 25-150 | |
| 18O2 PFHxS | 94.6 | 91.8 | 97 | 25-150 | |
| 13C4 PFOS | 95.6 | 89.3 | 93 | 25-150 | |
| 13C4-PFHpA | 100 | 135 | 135 | 25-150 | |
| 13C5 PFPeA | 100 | 101 | 101 | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2017.07.21C_018.d

Lab ID: LCSD 320-174599/3-A

Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCSD CONCENTRATION (ng/L) | LCSD % REC | % RPD | QC LIMITS | | # |
|---------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorobutanoic acid (PFBA) | 40.0 | 47.2 | 118 | 5 | 30 | 60-140 | |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 43.9 | 110 | 4 | 30 | 60-140 | |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 42.9 | 107 | 0 | 30 | 60-140 | |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 43.3 | 108 | 6 | 30 | 60-140 | |
| Perfluorooctanoic acid (PFOA) | 40.0 | 42.9 | 107 | 2 | 30 | 60-140 | |
| Perfluorononanoic acid (PFNA) | 40.0 | 42.8 | 107 | 1 | 30 | 60-140 | |
| Perfluorodecanoic acid (PFDA) | 40.0 | 42.5 | 106 | 3 | 30 | 60-140 | |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 40.6 | 101 | 8 | 30 | 60-140 | |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 43.8 | 109 | 1 | 30 | 60-140 | |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 46.6 | 117 | 7 | 30 | 50-150 | |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 49.4 | 123 | 2 | 30 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 37.4 | 106 | 3 | 30 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 38.5 | 106 | 1 | 30 | 60-140 | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 41.6 | 109 | 7 | 30 | 50-150 | |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 39.2 | 106 | 2 | 30 | 60-140 | |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 38.4 | 100 | 3 | 30 | 50-150 | |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 43.3 | 108 | 1 | 30 | 60-140 | |
| 13C8 FOSA | 100 | 20.3 | 20 | | | 25-150 | Q |
| 13C4 PFBA | 100 | 97.0 | 97 | | | 25-150 | |
| 13C2 PFHxA | 100 | 105 | 105 | | | 25-150 | |
| 13C4 PFOA | 100 | 125 | 125 | | | 25-150 | |
| 13C5 PFNA | 100 | 111 | 111 | | | 25-150 | |
| 13C2 PFDA | 100 | 128 | 128 | | | 25-150 | |
| 13C2 PFUnA | 100 | 117 | 117 | | | 25-150 | |
| 13C2 PFDoA | 100 | 101 | 101 | | | 25-150 | |
| 18O2 PFHxS | 94.6 | 92.2 | 97 | | | 25-150 | |
| 13C4 PFOS | 95.6 | 91.5 | 96 | | | 25-150 | |
| 13C4-PFHpA | 100 | 132 | 132 | | | 25-150 | |
| 13C5 PFPeA | 100 | 101 | 101 | | | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab File ID: 2017.07.25B_002.d Lab Sample ID: MB 320-175074/1-A
 Matrix: Water Date Extracted: 07/20/2017 09:15
 Instrument ID: A8_N Date Analyzed: 07/25/2017 14:17
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|--------------------------|---------------------|----------------------|------------------|
| | LCS 320-175074/2-A | 2017.07.25B 003.d | 07/25/2017 14:24 |
| | LCSD 320-175074/3-A | 2017.07.25B 004.d | 07/25/2017 14:31 |
| TP-PFC-019-TPI RE | 320-29732-1 RE | 2017.07.25B 009.d | 07/25/2017 15:05 |
| TP-PFC-019-MID-CARBON RE | 320-29732-2 RE | 2017.07.25B 010.d | 07/25/2017 15:12 |
| TP-PFC-019-TPE RE | 320-29732-3 RE | 2017.07.25B 011.d | 07/25/2017 15:19 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-175074/1-A
 Matrix: Water Lab File ID: 2017.07.25B_002.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 09:15
 Sample wt/vol: 250.00 (mL) Date Analyzed: 07/25/2017 14:17
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175951 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|-------------------------------------|--------|-----|-----|-----|------|
| 376-06-7 | Perfluorotetradecanoic acid (PFTeA) | 0.807 | J M | 2.5 | 1.0 | 0.40 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL00998 | 13C2 PFD0A | 116 | | 25-150 |

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.07.25B_003.d
 Lab ID: LCS 320-175074/2-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|--|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 58.6 | 146 | 50-150 | |
| 13C2 PFDoA | 100 | 105 | 105 | 25-150 | |

Column to be used to flag recovery and RPD values
 FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2017.07.25B_004.d

Lab ID: LCSD 320-175074/3-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCSD CONCENTRATION (ng/L) | LCSD % REC | % RPD | QC LIMITS | | # |
|--|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 64.6 | 162 | 10 | 30 | 50-150 | Q |
| 13C2 PFDoA | 100 | 106 | 106 | | | 25-150 | |

Column to be used to flag recovery and RPD values
FORM III 537 (Modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab File ID: 2017.07.23A_002.d Lab Sample ID: MB 320-175097/1-A
 Matrix: Water Date Extracted: 07/20/2017 10:13
 Instrument ID: A8_N Date Analyzed: 07/23/2017 14:39
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|-----------------------|---------------------|------------------------|------------------|
| | LCS 320-175097/2-A | 2017.07.23A 003.d | 07/23/2017 14:46 |
| | LCSD 320-175097/3-A | 2017.07.23A 004.d | 07/23/2017 14:53 |
| TP-PFC-019-TPI | 320-29732-1 | 2017.07.23A 016.d | 07/23/2017 16:16 |
| TP-PFC-019-TPE | 320-29732-3 | 2017.07.23A 018.d | 07/23/2017 16:30 |
| TP-PFC-019-TPI DL | 320-29732-1 DL | 2017.07.24A A 029.d | 07/24/2017 20:07 |
| TP-PFC-019-MID-CARBON | 320-29732-2 | 2017.07.24A A 030.d | 07/24/2017 20:14 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-175097/1-A
 Matrix: Water Lab File ID: 2017.07.23A_002.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250 (mL) Date Analyzed: 07/23/2017 14:39
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|------------|---------------------------------------|--------|---|-----|-----|------|
| 375-22-4 | Perfluorobutanoic acid (PFBA) | 1.0 | U | 2.5 | 1.0 | 0.46 |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 2.0 | U | 2.5 | 2.0 | 0.99 |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 2.0 | U | 2.5 | 2.0 | 0.79 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 2.0 | U | 2.5 | 2.0 | 0.80 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 2.0 | U | 2.5 | 2.0 | 0.75 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 2.0 | U | 2.5 | 2.0 | 0.65 |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1.0 | U | 2.5 | 1.0 | 0.44 |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 2.0 | U | 2.5 | 2.0 | 0.75 |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 2.0 | U | 2.5 | 2.0 | 0.58 |
| 72629-94-8 | Perfluorotridecanoic Acid (PFTriA) | 2.0 | U | 2.5 | 2.0 | 0.55 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 2.0 | U | 2.5 | 2.0 | 0.92 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 2.0 | U | 2.5 | 2.0 | 0.87 |
| 375-92-8 | Perfluoroheptanesulfonic Acid (PFHpS) | 2.0 | U | 2.5 | 2.0 | 0.71 |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 3.0 | U | 4.0 | 3.0 | 1.3 |
| 335-77-3 | Perfluorodecanesulfonic acid (PFDS) | 3.0 | U | 4.0 | 3.0 | 1.2 |
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.0 | U | 40 | 2.0 | 0.64 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-175097/1-A
 Matrix: Water Lab File ID: 2017.07.23A_002.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/20/2017 10:13
 Sample wt/vol: 250 (mL) Date Analyzed: 07/23/2017 14:39
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 175528 Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 51 | | 25-150 |
| STL00992 | 13C4 PFBA | 103 | | 25-150 |
| STL00993 | 13C2 PFHxA | 100 | | 25-150 |
| STL00990 | 13C4 PFOA | 110 | | 25-150 |
| STL00995 | 13C5 PFNA | 102 | | 25-150 |
| STL00996 | 13C2 PFDA | 118 | | 25-150 |
| STL00997 | 13C2 PFUnA | 98 | | 25-150 |
| STL00998 | 13C2 PFDoA | 84 | | 25-150 |
| STL00994 | 18O2 PFHxS | 96 | | 25-150 |
| STL00991 | 13C4 PFOS | 93 | | 25-150 |
| STL01892 | 13C4-PFHpA | 114 | | 25-150 |
| STL01893 | 13C5 PFPeA | 105 | | 25-150 |

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.07.23A_003.d
 Lab ID: LCS 320-175097/2-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|---------------------------------------|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorobutanoic acid (PFBA) | 40.0 | 43.9 | 110 | 60-140 | |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 40.4 | 101 | 60-140 | |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 41.9 | 105 | 60-140 | |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 42.1 | 105 | 60-140 | |
| Perfluorooctanoic acid (PFOA) | 40.0 | 39.8 | 100 | 60-140 | |
| Perfluorononanoic acid (PFNA) | 40.0 | 42.2 | 105 | 60-140 | |
| Perfluorodecanoic acid (PFDA) | 40.0 | 42.6 | 107 | 60-140 | |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 41.4 | 104 | 60-140 | |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 46.3 | 116 | 60-140 | |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 54.0 | 135 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 39.2 | 111 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 35.8 | 98 | 60-140 | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 44.5 | 117 | 50-150 | |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 38.2 | 103 | 60-140 | |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 42.5 | 110 | 50-150 | |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 43.1 | 108 | 60-140 | |
| 13C8 FOSA | 100 | 6.86 | 7 | 25-150 | Q |
| 13C4 PFBA | 100 | 101 | 101 | 25-150 | |
| 13C2 PFHxA | 100 | 100 | 100 | 25-150 | |
| 13C4 PFOA | 100 | 113 | 113 | 25-150 | |
| 13C5 PFNA | 100 | 97.6 | 98 | 25-150 | |
| 13C2 PFDA | 100 | 120 | 120 | 25-150 | |
| 13C2 PFUnA | 100 | 104 | 104 | 25-150 | |
| 13C2 PFDoA | 100 | 85.8 | 86 | 25-150 | |
| 18O2 PFHxS | 94.6 | 95.7 | 101 | 25-150 | |
| 13C4 PFOS | 95.6 | 89.9 | 94 | 25-150 | |
| 13C4-PFHpA | 100 | 119 | 119 | 25-150 | |
| 13C5 PFPeA | 100 | 102 | 102 | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2017.07.23A_004.d

Lab ID: LCSD 320-175097/3-A

Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCSD CONCENTRATION (ng/L) | LCSD % REC | % RPD | QC LIMITS | | # |
|---------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorobutanoic acid (PFBA) | 40.0 | 45.8 | 114 | 4 | 30 | 60-140 | |
| Perfluoropentanoic acid (PFPeA) | 40.0 | 43.1 | 108 | 6 | 30 | 60-140 | |
| Perfluorohexanoic acid (PFHxA) | 40.0 | 43.2 | 108 | 3 | 30 | 60-140 | |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 42.3 | 106 | 0 | 30 | 60-140 | |
| Perfluorooctanoic acid (PFOA) | 40.0 | 41.6 | 104 | 4 | 30 | 60-140 | |
| Perfluorononanoic acid (PFNA) | 40.0 | 40.9 | 102 | 3 | 30 | 60-140 | |
| Perfluorodecanoic acid (PFDA) | 40.0 | 39.8 | 100 | 7 | 30 | 60-140 | |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 42.6 | 107 | 3 | 30 | 60-140 | |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 45.0 | 113 | 3 | 30 | 60-140 | |
| Perfluorotridecanoic Acid (PFTriA) | 40.0 | 48.6 | 122 | 10 | 30 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 39.5 | 112 | 1 | 30 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 35.3 | 97 | 1 | 30 | 60-140 | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 38.1 | 45.3 | 119 | 2 | 30 | 50-150 | |
| Perfluorooctanesulfonic acid (PFOS) | 37.1 | 41.3 | 111 | 8 | 30 | 60-140 | |
| Perfluorodecanesulfonic acid (PFDS) | 38.6 | 43.3 | 112 | 2 | 30 | 50-150 | |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 44.6 | 112 | 3 | 30 | 60-140 | |
| 13C8 FOSA | 100 | 25.1 | 25 | | | 25-150 | |
| 13C4 PFBA | 100 | 111 | 111 | | | 25-150 | |
| 13C2 PFHxA | 100 | 105 | 105 | | | 25-150 | |
| 13C4 PFOA | 100 | 116 | 116 | | | 25-150 | |
| 13C5 PFNA | 100 | 105 | 105 | | | 25-150 | |
| 13C2 PFDA | 100 | 128 | 128 | | | 25-150 | |
| 13C2 PFUnA | 100 | 104 | 104 | | | 25-150 | |
| 13C2 PFDoA | 100 | 93.7 | 94 | | | 25-150 | |
| 18O2 PFHxS | 94.6 | 103 | 108 | | | 25-150 | |
| 13C4 PFOS | 95.6 | 91.2 | 95 | | | 25-150 | |
| 13C4-PFHpA | 100 | 124 | 124 | | | 25-150 | |
| 13C5 PFPeA | 100 | 104 | 104 | | | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab File ID: 2017.07.27C_002.d Lab Sample ID: MB 320-175742/1-A
 Matrix: Water Date Extracted: 07/25/2017 09:12
 Instrument ID: A8_N Date Analyzed: 07/27/2017 20:55
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---------------------|---------------------|----------------------|------------------|
| | LCS 320-175742/2-A | 2017.07.27C 003.d | 07/27/2017 21:02 |
| | LCSD 320-175742/3-A | 2017.07.27C 004.d | 07/27/2017 21:09 |
| TP-PFC-019-TPE-D RE | 320-29732-4 RE | 2017.07.27C 014.d | 07/27/2017 22:18 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-175742/1-A
 Matrix: Water Lab File ID: 2017.07.27C_002.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/25/2017 09:12
 Sample wt/vol: 250.00 (mL) Date Analyzed: 07/27/2017 20:55
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 176487 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|----------|------------------------------------|--------|---|-----|-----|------|
| 754-91-6 | Perfluorooctane Sulfonamide (FOSA) | 2.0 | U | 40 | 2.0 | 0.64 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|----------|------------------|------|---|--------|
| STL01056 | 13C8 FOSA | 63 | | 25-150 |

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.07.27C_003.d
 Lab ID: LCS 320-175742/2-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|---------------------------------------|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 44.4 | 111 | 60-140 | |
| 13C8 FOSA | 100 | 62.0 | 62 | 25-150 | |

Column to be used to flag recovery and RPD values
 FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2017.07.27C_004.d

Lab ID: LCSD 320-175742/3-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCSD CONCENTRATION (ng/L) | LCSD % REC | % RPD | QC LIMITS | | # |
|---------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorooctane Sulfonamide (FOSA) | 40.0 | 45.0 | 112 | 1 | 30 | 60-140 | |
| 13C8 FOSA | 100 | 55.3 | 55 | | | 25-150 | |

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/20/2017 17:08

Analysis Batch Number: 175252 End Date: 07/20/2017 18:18

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|----------------------|-----------------------|
| ZZZZZ | | 07/20/2017 17:08 | 1 | | GeminiC18 3x100 3(mm) |
| IC 320-175252/3 | | 07/20/2017 17:15 | 1 | 2017.07.20ICAL_003.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/4 | | 07/20/2017 17:22 | 1 | 2017.07.20ICAL_004.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/5 | | 07/20/2017 17:29 | 1 | 2017.07.20ICAL_005.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/6 | | 07/20/2017 17:36 | 1 | 2017.07.20ICAL_006.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/7 | | 07/20/2017 17:43 | 1 | 2017.07.20ICAL_007.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/8 | | 07/20/2017 17:50 | 1 | 2017.07.20ICAL_008.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/9 | | 07/20/2017 17:57 | 1 | 2017.07.20ICAL_009.d | GeminiC18 3x100 3(mm) |
| IC 320-175252/10 | | 07/20/2017 18:04 | 1 | 2017.07.20ICAL_010.d | GeminiC18 3x100 3(mm) |
| ICB 320-175252/11 | | 07/20/2017 18:11 | 1 | | GeminiC18 3x100 3(mm) |
| ICV 320-175252/12 | | 07/20/2017 18:18 | 1 | 2017.07.20ICAL_012.d | GeminiC18 3x100 3(mm) |

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175252/3 | 2017.07.20ICAL_003.d |
| Level 2 | IC 320-175252/4 | 2017.07.20ICAL_004.d |
| Level 3 | IC 320-175252/5 | 2017.07.20ICAL_005.d |
| Level 4 | IC 320-175252/6 | 2017.07.20ICAL_006.d |
| Level 5 | IC 320-175252/7 | 2017.07.20ICAL_007.d |
| Level 6 | IC 320-175252/8 | 2017.07.20ICAL_008.d |
| Level 7 | IC 320-175252/9 | 2017.07.20ICAL_009.d |

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD | # | MAX %RSD | R ² OR COD | # | MIN R ² OR COD |
|-------------|------------------|------------------|------------------|--------|------------|-------------|------------|----|---|--------|------|------|----------|-----------------------|---|---------------------------|
| | LVL 1 LVL 5 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 | | B | M1 | M2 | | | | | | | | |
| 13C4 PFBA | 184012 185552 | 188724 167545 | 191598 156668 | 185732 | Ave | | 179975.766 | | | 7.1 | | 50.0 | | | | |
| 13C5 PFPeA | 122795 124528 | 130582 109997 | 126664 100849 | 121600 | Ave | | 119573.457 | | | 8.7 | | 50.0 | | | | |
| 13C2 PFHxA | 114823 110433 | 116762 102742 | 116882 96851 | 114330 | Ave | | 110403.354 | | | 7.0 | | 50.0 | | | | |
| 13C4-PFHpA | 95409 103374 | 102587 94116 | 101750 82732 | 101240 | Ave | | 97315.4086 | | | 7.6 | | 50.0 | | | | |
| 18O2 PFHxS | 159078 167295 | 166967 156734 | 162565 148473 | 161303 | Ave | | 160345.113 | | | 4.1 | | 50.0 | | | | |
| M2-6:2FTS | 51318 53113 | 53061 51429 | 54985 52915 | 51250 | Ave | | 52581.6090 | | | 2.6 | | 50.0 | | | | |
| 13C4 PFOA | 93593 89561 | 94544 76147 | 96123 71904 | 92711 | Ave | | 87797.4314 | | | 11.0 | | 50.0 | | | | |
| 13C4 PFOS | 118735 120329 | 123509 112784 | 117549 112924 | 120440 | Ave | | 118038.613 | | | 3.4 | | 50.0 | | | | |
| 13C5 PFNA | 72184 70397 | 73797 65028 | 73618 58471 | 71479 | Ave | | 69282.2000 | | | 8.1 | | 50.0 | | | | |
| 13C8 FOSA | 207809 196759 | 198672 183580 | 210281 171947 | 205012 | Ave | | 196294.226 | | | 7.1 | | 50.0 | | | | |
| M2-8:2FTS | 40505 38389 | 41503 36290 | 41937 35315 | 40810 | Ave | | 39249.7614 | | | 6.7 | | 50.0 | | | | |
| 13C2 PFDA | 64076 62969 | 65299 54232 | 66024 49314 | 61667 | Ave | | 60511.5114 | | | 10.4 | | 50.0 | | | | |
| d3-NMeFOSAA | 21840 23007 | 21552 20583 | 23199 21005 | 22482 | Ave | | 21952.5343 | | | 4.5 | | 50.0 | | | | |
| d5-NEtFOSAA | 23638 22454 | 23747 21205 | 24829 21348 | 23716 | Ave | | 22990.8743 | | | 5.9 | | 50.0 | | | | |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD | # | MAX %RSD | R ² OR COD | # | MIN R ² OR COD |
|--------------|----------------|----------------|----------------|-------|---------------|-------------|------------|----|---|--------|------|---|-------------|--------------------------|---|------------------------------|
| | LVL 1 LVL 5 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 | | B | M1 | M2 | | | | | | | | |
| 13C2 PFUnA | 43482 44328 | 46382 38330 | 47040 34692 | 39683 | Ave | | 41991.1343 | | | 10.8 | | | 50.0 | | | |
| d-N-MeFOSA-M | 51083 51227 | 47844 49888 | 51933 51332 | 49699 | Ave | | 50429.4543 | | | 2.8 | | | 50.0 | | | |
| 13C2 PFDoA | 49998 40202 | 41982 42031 | 46572 39982 | 44162 | Ave | | 43561.2200 | | | 8.4 | | | 50.0 | | | |
| d-N-EtFOSA-M | 51432 51144 | 48396 51163 | 52153 50933 | 51166 | Ave | | 50912.4286 | | | 2.3 | | | 50.0 | | | |
| 13C2-PFTeDA | 88801 79851 | 84941 77303 | 86226 71548 | 80617 | Ave | | 81326.5571 | | | 7.2 | | | 50.0 | | | |
| 13C2-PFHxDA | 47408 41414 | 41944 41386 | 44280 37378 | 43594 | Ave | | 42486.3314 | | | 7.3 | | | 50.0 | | | |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15

Calibration End Date: 07/20/2017 18:04

Calibration ID: 32643

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|--|------------------|------------------|--------|--------|--------|------------|-------------|--------|----|---|---------|------|------|----------|------------|--------|----------------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| | LVL 6 | LVL 7 | | | | | | | | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 1.0150 0.8556 | 0.9771 0.7409 | 0.9659 | 0.9226 | 0.8977 | AveID | | 0.9107 | | | 10.1 | | 35.0 | | | | |
| Perfluoropentanoic acid (PFPeA) | 1.0871 0.9743 | 0.9322 0.8787 | 1.0552 | 1.0646 | 0.9902 | AveID | | 0.9975 | | | 7.6 | | 35.0 | | | | |
| Perfluorobutanesulfonic acid (PFBS) | 1.6953 1.2825 | 1.4041 1.0944 | 1.6070 | 1.5054 | 1.3629 | AveID | | 1.4217 | | | 14.3 | | 50.0 | | | | |
| 4:2 FTS | 1.1137 0.8956 | 0.9780 0.8369 | 0.9398 | 1.0533 | 0.9729 | AveID | | 0.9700 | | | 9.6 | | 35.0 | | | | |
| Perfluorohexanoic acid (PFHxA) | 1.0814 0.9008 | 0.9181 0.8787 | 0.9100 | 0.9357 | 0.9369 | AveID | | 0.9374 | | | 7.1 | | 35.0 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 1.0945 0.9939 | 1.0135 0.9511 | 0.9982 | 1.0358 | 0.9774 | AveID | | 1.0092 | | | 4.6 | | 35.0 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | ++++ 1.0013 | 1.1086 0.9657 | 1.0586 | 1.0369 | 0.9681 | AveID | | 1.0232 | | | 5.5 | | 35.0 | | | | |
| 6:2FTS | 0.9957 0.8067 | 0.8483 0.7520 | 0.8665 | 0.9000 | 0.8382 | AveID | | 0.8582 | | | 8.9 | | 35.0 | | | | |
| Perfluorooctanoic acid (PFOA) | 1.1331 1.0736 | 1.0214 1.0005 | 1.0415 | 1.0347 | 1.0191 | AveID | | 1.0463 | | | 4.3 | | 35.0 | | | | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 1.2356 1.1769 | 1.0912 1.0178 | 1.2622 | 1.2396 | 1.1926 | AveID | | 1.1737 | | | 7.6 | | 50.0 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 1.0995 1.0598 | 1.0062 1.0209 | 1.0806 | 1.0121 | 0.9593 | AveID | | 1.0341 | | | 4.7 | | 35.0 | | | | |
| Perfluorononanoic acid (PFNA) | 1.0772 0.9752 | 0.9533 0.9595 | 1.0417 | 1.0132 | 0.9799 | AveID | | 1.0000 | | | 4.6 | | 35.0 | | | | |
| Perfluorooctane Sulfonamide (FOSA) | 1.0534 0.8759 | 0.9355 0.8006 | 0.9460 | 0.9215 | 0.9319 | AveID | | 0.9235 | | | 8.3 | | 35.0 | | | | |
| 8:2FTS | 1.0777 0.8385 | 0.9372 0.8492 | 0.9582 | 0.8885 | 0.8781 | AveID | | 0.9182 | | | 9.0 | | 35.0 | | | | |
| Perfluorodecanoic acid (PFDA) | 0.9949 0.9184 | 0.9016 0.9416 | 0.9469 | 0.9647 | 0.8831 | AveID | | 0.9359 | | | 4.1 | | 35.0 | | | | |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | 0.9585 0.9529 | 0.8112 0.9465 | 0.8886 | 0.9039 | 0.8937 | AveID | | 0.9079 | | | 5.7 | | 35.0 | | | | |
| Perfluorodecanesulfonic acid (PFDS) | 0.7154 0.6191 | 0.6095 0.5849 | 0.7026 | 0.6196 | 0.6069 | AveID | | 0.6369 | | | 8.0 | | 50.0 | | | | |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | 0.9234 0.8571 | 0.8514 0.8434 | 0.8278 | 0.8198 | 0.8265 | AveID | | 0.8499 | | | 4.1 | | 35.0 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 1.4279 0.9777 | 1.0732 1.0219 | 1.0939 | 1.0993 | 0.9522 | L2ID | 0.1852 | 1.0054 | | | | | | 0.9940 | | 0.9900 | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|--|------------------|------------------|--------|--------|--------|------------|-------------|--------|----|---|---------|------|------|----------|------------|--------|----------------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| | LVL 6 | LVL 7 | | | | | | | | | | | | | | | |
| MeFOSA | 0.9241 0.9052 | 0.8075 0.8952 | 0.9412 | 0.9037 | 0.8958 | AveID | | 0.8961 | | | 4.7 | | 35.0 | | | | |
| Perfluorododecanoic acid (PFDoA) | 0.9526 0.9241 | 0.9700 0.8975 | 0.9547 | 0.9186 | 0.9920 | AveID | | 0.9442 | | | 3.5 | | 35.0 | | | | |
| N-EtFOSA-M | 0.9404 0.9341 | 0.9229 0.9204 | 0.9545 | 0.9058 | 0.9131 | AveID | | 0.9273 | | | 1.8 | | 35.0 | | | | |
| Perfluorotridecanoic Acid (PFTriA) | 0.8626 0.8079 | 0.8641 0.8105 | 0.8594 | 0.8657 | 0.8882 | AveID | | 0.8512 | | | 3.5 | | 50.0 | | | | |
| Perfluorotetradecanoic acid (PFTeA) | 2.3446 1.6352 | 2.1101 1.6519 | 2.1737 | 1.7703 | 1.9416 | AveID | | 1.9468 | | | 14.1 | | 50.0 | | | | |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | ++++ 0.8388 | 1.4914 0.8647 | 0.9572 | 0.9244 | 0.8465 | L2ID | 0.6384 | 0.8505 | | | | | | 0.9990 | | 0.9900 | |
| Perfluoro-n-octadecanoic acid (PFODA) | 0.9507 0.8809 | 0.8622 0.8650 | 0.8506 | 0.8241 | 0.9180 | AveID | | 0.8788 | | | 4.9 | | 50.0 | | | | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175252/3 | 2017.07.20ICAL_003.d |
| Level 2 | IC 320-175252/4 | 2017.07.20ICAL_004.d |
| Level 3 | IC 320-175252/5 | 2017.07.20ICAL_005.d |
| Level 4 | IC 320-175252/6 | 2017.07.20ICAL_006.d |
| Level 5 | IC 320-175252/7 | 2017.07.20ICAL_007.d |
| Level 6 | IC 320-175252/8 | 2017.07.20ICAL_008.d |
| Level 7 | IC 320-175252/9 | 2017.07.20ICAL_009.d |

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|-------------|------------|---------------------|--------------------|----------|----------|---------|-----------------------|--------------|-------|-------|-------|
| | | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| | | LVL 6 | LVL 7 | | | | LVL 6 | LVL 7 | | | |
| 13C4 PFBA | Ave | 9200596 8377231 | 9436219 7833395 | 9579895 | 9286597 | 9277585 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C5 PFPeA | Ave | 6139729 5499850 | 6529085 5042456 | 6333208 | 6079990 | 6226392 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFHxA | Ave | 5741173 5137101 | 5838100 4842529 | 5844106 | 5716524 | 5521641 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C4-PFHpA | Ave | 4770470 4705801 | 5129374 4136580 | 5087476 | 5061975 | 5168717 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 18O2 PFHxS | Ave | 7524410 7413535 | 7897552 7022783 | 7689311 | 7629615 | 7913061 | 47.3 47.3 | 47.3 47.3 | 47.3 | 47.3 | 47.3 |
| M2-6:2FTS | Ave | 2437617 2442868 | 2520393 2513479 | 2611787 | 2434393 | 2522848 | 47.5 47.5 | 47.5 47.5 | 47.5 | 47.5 | 47.5 |
| 13C4 PFOA | Ave | 4679652 3807339 | 4727178 3595203 | 4806165 | 4635535 | 4478029 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C4 PFOS | Ave | 5675527 5391084 | 5903714 5397776 | 5618820 | 5757051 | 5751748 | 47.8 47.8 | 47.8 47.8 | 47.8 | 47.8 | 47.8 |
| 13C5 PFNA | Ave | 3609220 3251409 | 3689841 2923565 | 3680912 | 3573960 | 3519863 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C8 FOSA | Ave | 10390454 9178999 | 9933579 8597334 | 10514072 | 10250601 | 9837940 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| M2-8:2FTS | Ave | 1940171 1738290 | 1988005 1691570 | 2008772 | 1954799 | 1838838 | 47.9 47.9 | 47.9 47.9 | 47.9 | 47.9 | 47.9 |
| 13C2 PFDA | Ave | 3203793 2711585 | 3264948 2465695 | 3301213 | 3083355 | 3148440 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d3-NMeFOSAA | Ave | 1091995 1029158 | 1077600 1050235 | 1159944 | 1124094 | 1150361 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d5-NEtFOSAA | Ave | 1181920 1060235 | 1187339 1067375 | 1241427 | 1185817 | 1122693 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFUnA | Ave | 2174103 1916521 | 2319108 1734594 | 2352011 | 1984157 | 2216403 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|--------------|------------|--------------------|--------------------|---------|---------|---------|-----------------------|--------------|-------|-------|-------|
| | | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| | | LVL 6 | LVL 7 | | | | LVL 6 | LVL 7 | | | |
| d-N-MeFOSA-M | Ave | 2554150 2494419 | 2392214 2566577 | 2596651 | 2484961 | 2561337 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFDoA | Ave | 2499919 2101530 | 2099102 1999100 | 2328581 | 2208104 | 2010091 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d-N-EtFOSA-M | Ave | 2571603 2558136 | 2419802 2546633 | 2607670 | 2558301 | 2557205 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2-PFTeDA | Ave | 4440061 3865134 | 4247031 3577415 | 4311299 | 4030828 | 3992527 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2-PFHxDA | Ave | 2370411 2069286 | 2097197 1868909 | 2213998 | 2179702 | 2070713 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |

Curve Type Legend:

Ave = Average

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175252/3 | 2017.07.20ICAL_003.d |
| Level 2 | IC 320-175252/4 | 2017.07.20ICAL_004.d |
| Level 3 | IC 320-175252/5 | 2017.07.20ICAL_005.d |
| Level 4 | IC 320-175252/6 | 2017.07.20ICAL_006.d |
| Level 5 | IC 320-175252/7 | 2017.07.20ICAL_007.d |
| Level 6 | IC 320-175252/8 | 2017.07.20ICAL_008.d |
| Level 7 | IC 320-175252/9 | 2017.07.20ICAL_009.d |

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|---------------------------------------|--------|------------|--------------------|--------------------|---------|---------|----------|-----------------------|--------------|-------|-------|-------|
| | | | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| | | | LVL 6 | LVL 7 | | | | LVL 6 | LVL 7 | | | |
| Perfluorobutanoic acid (PFBA) | | AveID | 93383 14335268 | 184401 23214875 | 925332 | 3426995 | 8328503 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | | AveID | 66748 10716890 | 121725 17723967 | 668298 | 2589050 | 6165403 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | | AveID | 119198 17769760 | 207251 28727203 | 1154707 | 4293133 | 10077823 | 0.442 88.4 | 0.884 177 | 4.42 | 17.7 | 44.2 |
| 4:2 FTS | | AveID | 26691 4301810 | 48470 8272054 | 241314 | 1008354 | 2413036 | 0.467 93.4 | 0.934 187 | 4.67 | 18.7 | 46.7 |
| Perfluorohexanoic acid (PFHxA) | | AveID | 62085 9254644 | 107198 17019818 | 531793 | 2139637 | 5173116 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | | AveID | 52213 9354552 | 103969 15737233 | 507848 | 2097220 | 5052067 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | | AveID | ++++ 14281648 | 168436 26096061 | 783004 | 3044035 | 7368752 | ++++ 91.0 | 0.910 182 | 4.55 | 18.2 | 45.5 |
| 6:2FTS | | AveID | 24221 3932933 | 42671 7544242 | 225835 | 874570 | 2110170 | 0.474 94.8 | 0.948 190 | 4.74 | 19.0 | 47.4 |
| Perfluorooctanoic acid (PFOA) | | AveID | 53024 8175273 | 96571 14387974 | 500571 | 1918515 | 4563458 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | | AveID | 69832 12636679 | 128302 21882659 | 706250 | 2842525 | 6830714 | 0.476 95.2 | 0.952 190 | 4.76 | 19.0 | 47.6 |
| Perfluorooctanesulfonic acid (PFOS) | | AveID | 60576 11092240 | 115323 21396229 | 589410 | 2262384 | 5355867 | 0.464 92.8 | 0.928 186 | 4.64 | 18.6 | 46.4 |
| Perfluorononanoic acid (PFNA) | | AveID | 38878 6341679 | 70352 11221107 | 383423 | 1448390 | 3449039 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | | AveID | 109454 16079802 | 185849 27533112 | 994657 | 3778234 | 9167796 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| 8:2FTS | | AveID | 20909 2915139 | 37263 5746246 | 192486 | 694740 | 1614685 | 0.479 95.8 | 0.958 192 | 4.79 | 19.2 | 47.9 |
| Perfluorodecanoic acid (PFDA) | | AveID | 31875 4980519 | 58871 9286312 | 312593 | 1189794 | 2780389 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|--|--------|------------|------------------|-------------------|--------|---------|---------|-----------------------|----------------|-------|-------|-------|
| | | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | | AveID | 10467 1961461 | 17484 3976390 | 103070 | 406426 | 1028023 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | | AveID | 40940 6731234 | 72566 12733574 | 398109 | 1438851 | 3520028 | 0.482 96.4 | 0.964 193 | 4.82 | 19.3 | 48.2 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | | AveID | 10914 1817407 | 20217 3601071 | 102763 | 388851 | 927893 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | | L2ID | 31045 3747668 | 49779 7090167 | 257295 | 872446 | 2110542 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| MeFOSA | | AveID | 23604 4515811 | 38635 9190215 | 244390 | 898240 | 2294511 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | | AveID | 23814 3884028 | 40721 7176939 | 222314 | 811349 | 1994038 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| N-EtFOSA-M | | AveID | 24183 4779335 | 44664 9376063 | 248915 | 926942 | 2334866 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | | AveID | 21565 3395607 | 36276 6481083 | 200109 | 764621 | 1785380 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | | AveID | 58614 6873007 | 88585 13208906 | 506153 | 1563632 | 3902732 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | | L2ID | +++++ 3525628 | 62612 6914779 | 222901 | 816435 | 1701571 | +++++ 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | | AveID | 23766 3702487 | 36195 6917166 | 198059 | 727856 | 1845337 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |

Curve Type Legend:

| |
|----------------------------------|
| AveID = Average isotope dilution |
| L2ID = Linear 1/conc^2 IsoDil |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: ICV 320-175252/12 Calibration Date: 07/20/2017 18:18
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.20ICAL_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.9107 | 0.9350 | | 50.8 | 49.5 | 2.7 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 0.997 | 1.081 | | 53.7 | 49.5 | 8.4 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.422 | 1.601 | | 49.3 | 43.8 | 12.6 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9374 | 1.040 | | 54.9 | 49.5 | 11.0 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.009 | 1.099 | | 53.9 | 49.5 | 8.9 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.023 | 1.070 | | 48.9 | 46.8 | 4.6 | 25.0 |
| 6:2FTS | AveID | 0.8582 | 0.9405 | | 51.4 | 46.9 | 9.6 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.046 | 1.133 | | 53.6 | 49.5 | 8.3 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.174 | 1.228 | | 49.3 | 47.1 | 4.7 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.000 | 1.056 | | 52.3 | 49.5 | 5.6 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.034 | 0.9896 | | 45.2 | 47.3 | -4.3 | 25.0 |
| 8:2FTS | AveID | 0.9182 | 0.9403 | | 48.6 | 47.4 | 2.4 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9235 | 0.9705 | | 52.0 | 49.5 | 5.1 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9359 | 0.9767 | | 51.7 | 49.5 | 4.4 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9079 | 0.9670 | | 52.7 | 49.5 | 6.5 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6369 | 0.6599 | | 49.5 | 47.8 | 3.6 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8499 | 0.8856 | | 51.6 | 49.5 | 4.2 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.039 | | 51.0 | 49.5 | 3.0 | 25.0 |
| MeFOSA | AveID | 0.8961 | 0.9655 | | 53.3 | 49.5 | 7.7 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9442 | 1.017 | | 53.3 | 49.5 | 7.8 | 25.0 |
| N-EtFOSA-M | AveID | 0.9273 | 1.032 | | 55.1 | 49.5 | 11.3 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8512 | 0.9449 | | 55.0 | 49.5 | 11.0 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.947 | 2.005 | | 51.0 | 49.5 | 3.0 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.9234 | | 53.0 | 49.5 | 7.1 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.8788 | 0.9130 | | 51.4 | 49.5 | 3.9 | 25.0 |
| 13C4 PFBA | Ave | 179976 | 178028 | | 49.0 | 49.5 | -1.1 | 50.0 |
| 13C5 PFPeA | Ave | 119573 | 116570 | | 48.3 | 49.5 | -2.5 | 50.0 |
| 13C2 PFHxA | Ave | 110403 | 106759 | | 47.9 | 49.5 | -3.3 | 50.0 |
| 13C4-PFHpA | Ave | 97315 | 95437 | | 48.5 | 49.5 | -1.9 | 50.0 |
| 18O2 PFHxS | Ave | 160345 | 155563 | | 45.4 | 46.8 | -3.0 | 50.0 |
| M2-6:2FTS | Ave | 52582 | 50555 | | 45.2 | 47.0 | -3.9 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: ICV 320-175252/12 Calibration Date: 07/20/2017 18:18
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.20ICAL_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 87797 | 83504 | | 47.1 | 49.5 | -4.9 | 50.0 |
| 13C4 PFOS | Ave | 118039 | 113145 | | 45.4 | 47.3 | -4.1 | 50.0 |
| 13C5 PFNA | Ave | 69282 | 65202 | | 46.6 | 49.5 | -5.9 | 50.0 |
| 13C8 FOSA | Ave | 196294 | 177132 | | 44.7 | 49.5 | -9.8 | 50.0 |
| M2-8:2FTS | Ave | 39250 | 37570 | | 45.4 | 47.4 | -4.3 | 50.0 |
| 13C2 PFDA | Ave | 60512 | 57778 | | 47.3 | 49.5 | -4.5 | 50.0 |
| d3-NMeFOSAA | Ave | 21953 | 21994 | | 49.6 | 49.5 | 0.2 | 50.0 |
| 13C2 PFUnA | Ave | 41991 | 38026 | | 44.8 | 49.5 | -9.4 | 50.0 |
| d5-NEtFOSAA | Ave | 22991 | 21543 | | 46.4 | 49.5 | -6.3 | 50.0 |
| d-N-MeFOSA-M | Ave | 50429 | 49400 | | 48.5 | 49.5 | -2.0 | 50.0 |
| 13C2 PFDoA | Ave | 43561 | 39439 | | 44.8 | 49.5 | -9.5 | 50.0 |
| d-N-EtFOSA-M | Ave | 50912 | 49235 | | 47.9 | 49.5 | -3.3 | 50.0 |
| 13C2-PFTeDA | Ave | 81327 | 74098 | | 45.1 | 49.5 | -8.9 | 50.0 |
| 13C2-PFHxDA | Ave | 42486 | 39580 | | 46.1 | 49.5 | -6.8 | 50.0 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/21/2017 11:54

Analysis Batch Number: 175391 End Date: 07/21/2017 12:28

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|-------------------|-----------------------|
| CCVL 320-175391/2 | | 07/21/2017 11:54 | 1 | 2017.07.21A_005.d | GeminiC18 3x100 3(mm) |
| CCV 320-175391/3 | | 07/21/2017 12:00 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 12:07 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 12:14 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/21/2017 12:21 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175391/7 | | 07/21/2017 12:28 | 1 | | GeminiC18 3x100 3(mm) |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175391/2 Calibration Date: 07/21/2017 11:54
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21A_005.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.9107 | 0.8995 | | 0.988 | 1.00 | -1.2 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 0.997 | 1.133 | | 1.14 | 1.00 | 13.6 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.422 | 1.364 | | 0.848 | 0.884 | -4.0 | 50.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9374 | 1.007 | | 1.07 | 1.00 | 7.4 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.009 | 1.046 | | 1.04 | 1.00 | 3.7 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.023 | 1.141 | | 1.01 | 0.910 | 11.5 | 50.0 |
| 6:2FTS | AveID | 0.8582 | 0.9025 | | 0.997 | 0.948 | 5.2 | 50.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.046 | 1.063 | | 1.02 | 1.00 | 1.6 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.174 | 1.187 | | 0.962 | 0.952 | 1.1 | 50.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.000 | 0.9449 | | 0.945 | 1.00 | -5.5 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.034 | 1.053 | | 0.945 | 0.928 | 1.8 | 50.0 |
| 8:2FTS | AveID | 0.9182 | 1.018 | | 1.06 | 0.958 | 10.8 | 50.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9359 | 0.9908 | | 1.06 | 1.00 | 5.9 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9235 | 0.9134 | | 0.989 | 1.00 | -1.1 | 50.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9079 | 0.8950 | | 0.986 | 1.00 | -1.4 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6369 | 0.6395 | | 0.968 | 0.964 | 0.4 | 50.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8499 | 0.7960 | | 0.937 | 1.00 | -6.3 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.062 | | 0.872 | 1.00 | -12.8 | 50.0 |
| MeFOSA | AveID | 0.8961 | 0.8927 | | 0.996 | 1.00 | -0.4 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9442 | 1.001 | | 1.06 | 1.00 | 6.0 | 50.0 |
| N-EtFOSA-M | AveID | 0.9273 | 0.8998 | | 0.970 | 1.00 | -3.0 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8512 | 0.8216 | | 0.965 | 1.00 | -3.5 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.947 | 2.245 | | 1.15 | 1.00 | 15.3 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 1.269 | | 0.741 | 1.00 | -25.9 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.8788 | 0.6894 | | 0.784 | 1.00 | -21.6 | 50.0 |
| 13C4 PFBA | Ave | 179976 | 182006 | | 50.6 | 50.0 | 1.1 | 50.0 |
| 13C5 PFPeA | Ave | 119573 | 130340 | | 54.5 | 50.0 | 9.0 | 50.0 |
| 13C2 PFHxA | Ave | 110403 | 120169 | | 54.4 | 50.0 | 8.8 | 50.0 |
| 13C4-PFHpA | Ave | 97315 | 116627 | | 59.9 | 50.0 | 19.8 | 50.0 |
| 18O2 PFHxS | Ave | 160345 | 175831 | | 51.9 | 47.3 | 9.7 | 50.0 |
| M2-6:2FTS | Ave | 52582 | 56274 | | 50.8 | 47.5 | 7.0 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175391/2 Calibration Date: 07/21/2017 11:54
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21A_005.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 87797 | 106007 | | 60.4 | 50.0 | 20.7 | 50.0 |
| 13C4 PFOS | Ave | 118039 | 121001 | | 49.0 | 47.8 | 2.5 | 50.0 |
| 13C5 PFNA | Ave | 69282 | 84924 | | 61.3 | 50.0 | 22.6 | 50.0 |
| M2-8:2FTS | Ave | 39250 | 43515 | | 53.1 | 47.9 | 10.9 | 50.0 |
| 13C2 PFDA | Ave | 60512 | 71626 | | 59.2 | 50.0 | 18.4 | 50.0 |
| 13C8 FOSA | Ave | 196294 | 206709 | | 52.7 | 50.0 | 5.3 | 50.0 |
| d3-NMeFOSAA | Ave | 21953 | 26451 | | 60.2 | 50.0 | 20.5 | 50.0 |
| 13C2 PFUnA | Ave | 41991 | 54054 | | 64.4 | 50.0 | 28.7 | 50.0 |
| d5-NEtFOSAA | Ave | 22991 | 27935 | | 60.8 | 50.0 | 21.5 | 50.0 |
| d-N-MeFOSA-M | Ave | 50429 | 49501 | | 49.1 | 50.0 | -1.8 | 50.0 |
| 13C2 PFDoA | Ave | 43561 | 50612 | | 58.1 | 50.0 | 16.2 | 50.0 |
| d-N-EtFOSA-M | Ave | 50912 | 48873 | | 48.0 | 50.0 | -4.0 | 50.0 |
| 13C2-PFTeDA | Ave | 81327 | 95625 | | 58.8 | 50.0 | 17.6 | 50.0 |
| 13C2-PFHxDA | Ave | 42486 | 43502 | | 51.2 | 50.0 | 2.4 | 50.0 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/21/2017 20:38

Analysis Batch Number: 175462 End Date: 07/21/2017 23:44

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---------------------|------------------|------------------|-----------------|-----------------------|------------------------|
| CCV 320-175462/1 | | 07/21/2017 20:38 | 1 | 2017.07.21C_015 .d | GeminiC18 3x100 3 (mm) |
| MB 320-174599/1-A | | 07/21/2017 20:45 | 1 | 2017.07.21C_016 .d | GeminiC18 3x100 3 (mm) |
| LCS 320-174599/2-A | | 07/21/2017 20:52 | 1 | 2017.07.21C_017 .d | GeminiC18 3x100 3 (mm) |
| LCSD 320-174599/3-A | | 07/21/2017 20:59 | 1 | 2017.07.21C_018 .d | GeminiC18 3x100 3 (mm) |
| 320-29732-4 | | 07/21/2017 21:06 | 1 | 2017.07.21C_019 .d | GeminiC18 3x100 3 (mm) |
| CCV 320-175462/9 | | 07/21/2017 21:33 | 1 | 2017.07.21C_023 .d | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 21:47 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 21:54 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 22:01 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 22:08 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 22:15 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 22:42 | 1 | | GeminiC18 3x100 3 (mm) |
| CCV 320-175462/20 | | 07/21/2017 22:49 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 22:56 | 1 | | GeminiC18 3x100 3 (mm) |
| CCV 320-175462/22 | | 07/21/2017 23:03 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 23:10 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 23:17 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 23:24 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 23:31 | 1 | | GeminiC18 3x100 3 (mm) |
| ZZZZZ | | 07/21/2017 23:37 | 1 | | GeminiC18 3x100 3 (mm) |
| CCV 320-175462/28 | | 07/21/2017 23:44 | 1 | | GeminiC18 3x100 3 (mm) |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175462/1 Calibration Date: 07/21/2017 20:38
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21C_015.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.9107 | 0.9526 | | 20.9 | 20.0 | 4.6 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 0.997 | 1.054 | | 21.1 | 20.0 | 5.7 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.422 | 1.300 | | 16.2 | 17.7 | -8.5 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9374 | 0.9252 | | 19.7 | 20.0 | -1.3 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.009 | 1.021 | | 20.2 | 20.0 | 1.1 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.023 | 0.9749 | | 17.3 | 18.2 | -4.7 | 25.0 |
| 6:2FTS | AveID | 0.8582 | 0.9087 | | 20.1 | 19.0 | 5.9 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.046 | 1.091 | | 20.8 | 20.0 | 4.2 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.174 | 1.287 | | 20.9 | 19.0 | 9.7 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.000 | 0.9938 | | 19.9 | 20.0 | -0.6 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.034 | 1.053 | | 18.9 | 18.6 | 1.8 | 25.0 |
| 8:2FTS | AveID | 0.9182 | 0.9223 | | 19.2 | 19.2 | 0.4 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9359 | 1.023 | | 21.9 | 20.0 | 9.3 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9235 | 0.9545 | | 20.7 | 20.0 | 3.4 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9079 | 0.9137 | | 20.1 | 20.0 | 0.6 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6369 | 0.6186 | | 18.7 | 19.3 | -2.9 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8499 | 0.8808 | | 20.7 | 20.0 | 3.6 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.027 | | 20.2 | 20.0 | 1.2 | 25.0 |
| MeFOSA | AveID | 0.8961 | 0.9008 | | 20.1 | 20.0 | 0.5 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9442 | 0.9247 | | 19.6 | 20.0 | -2.1 | 25.0 |
| N-EtFOSA-M | AveID | 0.9273 | 0.9532 | | 20.6 | 20.0 | 2.8 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8512 | 0.8799 | | 20.7 | 20.0 | 3.4 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.947 | 1.852 | | 19.0 | 20.0 | -4.8 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8395 | | 19.0 | 20.0 | -5.0 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.8788 | 0.8346 | | 19.0 | 20.0 | -5.0 | 25.0 |
| 13C4 PFBA | Ave | 179976 | 185474 | | 51.5 | 50.0 | 3.1 | 50.0 |
| 13C5 PFPeA | Ave | 119573 | 129031 | | 54.0 | 50.0 | 7.9 | 50.0 |
| 13C2 PFHxA | Ave | 110403 | 121342 | | 55.0 | 50.0 | 9.9 | 50.0 |
| 13C4-PFHpA | Ave | 97315 | 114235 | | 58.7 | 50.0 | 17.4 | 50.0 |
| 18O2 PFHxS | Ave | 160345 | 172889 | | 51.0 | 47.3 | 7.8 | 50.0 |
| M2-6:2FTS | Ave | 52582 | 55336 | | 50.0 | 47.5 | 5.2 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175462/1 Calibration Date: 07/21/2017 20:38
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21C_015.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 87797 | 96890 | | 55.2 | 50.0 | 10.4 | 50.0 |
| 13C4 PFOS | Ave | 118039 | 117088 | | 47.4 | 47.8 | -0.8 | 50.0 |
| 13C5 PFNA | Ave | 69282 | 77579 | | 56.0 | 50.0 | 12.0 | 50.0 |
| M2-8:2FTS | Ave | 39250 | 39760 | | 48.5 | 47.9 | 1.3 | 50.0 |
| 13C2 PFDA | Ave | 60512 | 59881 | | 49.5 | 50.0 | -1.0 | 50.0 |
| 13C8 FOSA | Ave | 196294 | 197802 | | 50.4 | 50.0 | 0.8 | 50.0 |
| d3-NMeFOSAA | Ave | 21953 | 22025 | | 50.2 | 50.0 | 0.3 | 50.0 |
| d5-NEtFOSAA | Ave | 22991 | 23045 | | 50.1 | 50.0 | 0.2 | 50.0 |
| 13C2 PFUnA | Ave | 41991 | 46415 | | 55.3 | 50.0 | 10.5 | 50.0 |
| d-N-MeFOSA-M | Ave | 50429 | 50148 | | 49.7 | 50.0 | -0.6 | 50.0 |
| 13C2 PFDoA | Ave | 43561 | 45612 | | 52.4 | 50.0 | 4.7 | 50.0 |
| d-N-EtFOSA-M | Ave | 50912 | 49676 | | 48.8 | 50.0 | -2.4 | 50.0 |
| 13C2-PFTeDA | Ave | 81327 | 85439 | | 52.5 | 50.0 | 5.1 | 50.0 |
| 13C2-PFHxDA | Ave | 42486 | 41938 | | 49.4 | 50.0 | -1.3 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175462/9 Calibration Date: 07/21/2017 21:33
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21C_023.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.9107 | 0.9237 | | 50.7 | 50.0 | 1.4 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 0.997 | 0.9816 | | 49.2 | 50.0 | -1.6 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.422 | 1.255 | | 39.0 | 44.2 | -11.7 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9374 | 0.9560 | | 51.0 | 50.0 | 2.0 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.009 | 0.9936 | | 49.2 | 50.0 | -1.5 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.023 | 0.9776 | | 43.5 | 45.5 | -4.5 | 25.0 |
| 6:2FTS | AveID | 0.8582 | 0.8350 | | 46.1 | 47.4 | -2.7 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.046 | 1.028 | | 49.1 | 50.0 | -1.8 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.174 | 1.158 | | 47.0 | 47.6 | -1.3 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.000 | 0.996 | | 49.8 | 50.0 | -0.4 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.034 | 1.013 | | 45.5 | 46.4 | -2.0 | 25.0 |
| 8:2FTS | AveID | 0.9182 | 0.8612 | | 44.9 | 47.9 | -6.2 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9359 | 0.9261 | | 49.5 | 50.0 | -1.0 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9235 | 0.9079 | | 49.2 | 50.0 | -1.7 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9079 | 0.9213 | | 50.7 | 50.0 | 1.5 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6369 | 0.6071 | | 46.0 | 48.2 | -4.7 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8499 | 0.8386 | | 49.3 | 50.0 | -1.3 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 0.998 | | 49.4 | 50.0 | -1.1 | 25.0 |
| MeFOSA | AveID | 0.8961 | 0.8790 | | 49.0 | 50.0 | -1.9 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9442 | 0.9609 | | 50.9 | 50.0 | 1.8 | 25.0 |
| N-EtFOSA-M | AveID | 0.9273 | 0.9414 | | 50.8 | 50.0 | 1.5 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8512 | 0.9210 | | 54.1 | 50.0 | 8.2 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.947 | 1.833 | | 47.1 | 50.0 | -5.9 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8151 | | 47.2 | 50.0 | -5.7 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.8788 | 0.8071 | | 45.9 | 50.0 | -8.2 | 25.0 |
| 13C4 PFBA | Ave | 179976 | 179034 | | 49.7 | 50.0 | -0.5 | 50.0 |
| 13C5 PFPeA | Ave | 119573 | 122233 | | 51.1 | 50.0 | 2.2 | 50.0 |
| 13C2 PFHxA | Ave | 110403 | 118354 | | 53.6 | 50.0 | 7.2 | 50.0 |
| 13C4-PFHpA | Ave | 97315 | 108911 | | 56.0 | 50.0 | 11.9 | 50.0 |
| 18O2 PFHxS | Ave | 160345 | 174480 | | 51.5 | 47.3 | 8.8 | 50.0 |
| M2-6:2FTS | Ave | 52582 | 53483 | | 48.3 | 47.5 | 1.7 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175462/9 Calibration Date: 07/21/2017 21:33
 Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04
 Lab File ID: 2017.07.21C_023.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 87797 | 93139 | | 53.0 | 50.0 | 6.1 | 50.0 |
| 13C4 PFOS | Ave | 118039 | 114874 | | 46.5 | 47.8 | -2.7 | 50.0 |
| 13C5 PFNA | Ave | 69282 | 72949 | | 52.6 | 50.0 | 5.3 | 50.0 |
| M2-8:2FTS | Ave | 39250 | 39415 | | 48.1 | 47.9 | 0.4 | 50.0 |
| 13C2 PFDA | Ave | 60512 | 64619 | | 53.4 | 50.0 | 6.8 | 50.0 |
| 13C8 FOSA | Ave | 196294 | 196685 | | 50.1 | 50.0 | 0.2 | 50.0 |
| d3-NMeFOSAA | Ave | 21953 | 21431 | | 48.8 | 50.0 | -2.4 | 50.0 |
| d5-NEtFOSAA | Ave | 22991 | 22867 | | 49.7 | 50.0 | -0.5 | 50.0 |
| 13C2 PFUnA | Ave | 41991 | 45484 | | 54.2 | 50.0 | 8.3 | 50.0 |
| d-N-MeFOSA-M | Ave | 50429 | 51438 | | 51.0 | 50.0 | 2.0 | 50.0 |
| 13C2 PFDoA | Ave | 43561 | 42322 | | 48.6 | 50.0 | -2.8 | 50.0 |
| d-N-EtFOSA-M | Ave | 50912 | 48963 | | 48.1 | 50.0 | -3.8 | 50.0 |
| 13C2-PFTEtDA | Ave | 81327 | 81132 | | 49.9 | 50.0 | -0.2 | 50.0 |
| 13C2-PFHxDA | Ave | 42486 | 40673 | | 47.9 | 50.0 | -4.3 | 50.0 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/23/2017 13:10

Analysis Batch Number: 175476 End Date: 07/23/2017 14:12

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|----------------------|-----------------------|
| IC 320-175476/3 | | 07/23/2017 13:10 | 1 | 2017.07.23ICAL_003.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/4 | | 07/23/2017 13:17 | 1 | 2017.07.23ICAL_004.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/5 | | 07/23/2017 13:23 | 1 | 2017.07.23ICAL_005.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/6 | | 07/23/2017 13:30 | 1 | 2017.07.23ICAL_006.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/7 | | 07/23/2017 13:37 | 1 | 2017.07.23ICAL_007.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/8 | | 07/23/2017 13:44 | 1 | 2017.07.23ICAL_008.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/9 | | 07/23/2017 13:51 | 1 | 2017.07.23ICAL_009.d | GeminiC18 3x100 3(mm) |
| IC 320-175476/10 | | 07/23/2017 13:58 | 1 | 2017.07.23ICAL_010.d | GeminiC18 3x100 3(mm) |
| ICB 320-175476/11 | | 07/23/2017 14:05 | 1 | | GeminiC18 3x100 3(mm) |
| ICV 320-175476/12 | | 07/23/2017 14:12 | 1 | 2017.07.23ICAL_012.d | GeminiC18 3x100 3(mm) |

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175476/3 | 2017.07.23ICAL_003.d |
| Level 2 | IC 320-175476/4 | 2017.07.23ICAL_004.d |
| Level 3 | IC 320-175476/5 | 2017.07.23ICAL_005.d |
| Level 4 | IC 320-175476/6 | 2017.07.23ICAL_006.d |
| Level 5 | IC 320-175476/7 | 2017.07.23ICAL_007.d |
| Level 6 | IC 320-175476/8 | 2017.07.23ICAL_008.d |
| Level 7 | IC 320-175476/9 | 2017.07.23ICAL_009.d |

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|-------------|------------------|------------------|------------------|--------|------------|-------------|------------|----|---|--------|------|---|----------|------------|---|----------------|
| | LVL 1 LVL 5 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 | | B | M1 | M2 | | | | | | | | |
| 13C4 PFBA | 152053 157681 | 163980 154959 | 154495 144194 | 164812 | Ave | | 156024.871 | | | 4.6 | | | 50.0 | | | |
| 13C5 PFPeA | 112330 113367 | 114901 107128 | 114901 97483 | 114991 | Ave | | 110495.974 | | | 5.7 | | | 50.0 | | | |
| 13C2 PFHxA | 99251 101483 | 106825 95312 | 104111 95869 | 105244 | Ave | | 101156.454 | | | 4.5 | | | 50.0 | | | |
| 13C4-PFHpA | 82694 85260 | 86913 82470 | 90044 73260 | 86129 | Ave | | 83824.1743 | | | 6.4 | | | 50.0 | | | |
| 18O2 PFHxS | 132676 140952 | 140772 136009 | 138889 130681 | 142083 | Ave | | 137437.629 | | | 3.2 | | | 50.0 | | | |
| M2-6:2FTS | 44370 49800 | 49627 46134 | 46905 47140 | 48942 | Ave | | 47559.6782 | | | 4.2 | | | 50.0 | | | |
| 13C4 PFOA | 83673 88195 | 87871 73565 | 84657 66554 | 90489 | Ave | | 82143.4457 | | | 10.7 | | | 50.0 | | | |
| 13C4 PFOS | 109299 107020 | 110882 109073 | 108369 107040 | 105715 | Ave | | 108199.540 | | | 1.6 | | | 50.0 | | | |
| 13C5 PFNA | 69868 65902 | 70634 61867 | 69820 57186 | 64906 | Ave | | 65740.4057 | | | 7.5 | | | 50.0 | | | |
| 13C8 FOSA | 180231 189242 | 187050 179948 | 182777 175979 | 184386 | Ave | | 182801.637 | | | 2.5 | | | 50.0 | | | |
| M2-8:2FTS | 36776 38858 | 35522 34801 | 36506 36177 | 36861 | Ave | | 36500.1879 | | | 3.5 | | | 50.0 | | | |
| 13C2 PFDA | 54727 56447 | 59217 51539 | 59463 52282 | 57178 | Ave | | 55836.0714 | | | 5.6 | | | 50.0 | | | |
| d3-NMeFOSAA | 21012 22957 | 20987 21375 | 21804 22675 | 21311 | Ave | | 21731.6800 | | | 3.6 | | | 50.0 | | | |
| d5-NEtFOSAA | 21868 21108 | 22646 21365 | 22738 21137 | 22655 | Ave | | 21930.9771 | | | 3.4 | | | 50.0 | | | |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD | # | MAX %RSD | R ² OR COD | # | MIN R ² OR COD |
|--------------|----------------|----------------|----------------|-------|---------------|-------------|------------|----|---|--------|------|---|-------------|--------------------------|---|------------------------------|
| | LVL 1 LVL 5 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 | | B | M1 | M2 | | | | | | | | |
| 13C2 PFUnA | 44988 38449 | 44201 37291 | 43197 36369 | 40609 | Ave | | 40729.2057 | | | 8.5 | | | 50.0 | | | |
| d-N-MeFOSA-M | 43738 47802 | 46683 49088 | 45921 50400 | 46173 | Ave | | 47115.0286 | | | 4.7 | | | 50.0 | | | |
| 13C2 PFDoA | 44229 43579 | 48028 44039 | 45365 41750 | 45595 | Ave | | 44655.0257 | | | 4.4 | | | 50.0 | | | |
| d-N-EtFOSA-M | 45907 49432 | 47864 50609 | 48019 51479 | 48529 | Ave | | 48833.9629 | | | 3.8 | | | 50.0 | | | |
| 13C2-PFTEdA | 86593 82283 | 87322 74668 | 84744 74283 | 78620 | Ave | | 81216.2029 | | | 6.7 | | | 50.0 | | | |
| 13C2-PFHxDA | 40457 40950 | 42593 41518 | 41778 38464 | 43387 | Ave | | 41306.8029 | | | 3.9 | | | 50.0 | | | |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10

Calibration End Date: 07/23/2017 13:58

Calibration ID: 32678

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|--|------------------|------------------|--------|--------|--------|------------|-------------|--------|----|---|---------|------|------|----------|------------|--------|----------------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| | LVL 6 | LVL 7 | | | | | | | | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | 0.9204 0.8389 | 0.9010 0.7384 | 0.9703 | 0.9219 | 0.8832 | AveID | | 0.8820 | | | 8.5 | | 35.0 | | | | |
| Perfluoropentanoic acid (PFPeA) | 1.3238 1.0162 | 1.0545 0.8979 | 1.0382 | 0.9999 | 0.9641 | AveID | | 1.0421 | | | 12.9 | | 35.0 | | | | |
| Perfluorobutanesulfonic acid (PFBS) | 1.6998 1.3352 | 1.5456 1.1643 | 1.6131 | 1.5877 | 1.4777 | AveID | | 1.4891 | | | 12.3 | | 50.0 | | | | |
| 4:2 FTS | 1.1772 0.9459 | 0.9260 0.8438 | 1.0386 | 0.9471 | 0.9206 | AveID | | 0.9713 | | | 11.0 | | 35.0 | | | | |
| Perfluorohexanoic acid (PFHxA) | 1.0731 0.9221 | 0.9512 0.8534 | 0.9809 | 0.9481 | 0.9357 | AveID | | 0.9521 | | | 7.0 | | 35.0 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 1.2195 0.9596 | 1.0699 0.9644 | 1.0084 | 0.9973 | 0.9656 | AveID | | 1.0264 | | | 9.1 | | 35.0 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 1.3400 1.0197 | 1.1571 0.9743 | 1.0488 | 1.0267 | 1.0066 | AveID | | 1.0819 | | | 11.8 | | 35.0 | | | | |
| 6:2FTS | 0.9739 0.8557 | 0.9659 0.7586 | 0.9369 | 0.9112 | 0.8685 | AveID | | 0.8958 | | | 8.4 | | 35.0 | | | | |
| Perfluorooctanoic acid (PFOA) | 1.1606 1.0660 | 1.0051 1.0353 | 1.0728 | 1.1094 | 1.0181 | AveID | | 1.0668 | | | 5.1 | | 35.0 | | | | |
| Perfluoroheptanesulfonic Acid (PFHpS) | 1.1568 1.0561 | 1.1294 1.0130 | 1.1726 | 1.1912 | 1.1318 | AveID | | 1.1216 | | | 5.7 | | 50.0 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 1.1299 0.9935 | 1.0601 1.0444 | 1.0888 | 1.0669 | 1.0166 | AveID | | 1.0572 | | | 4.3 | | 35.0 | | | | |
| Perfluorononanoic acid (PFNA) | 1.1047 0.9716 | 1.0187 0.9554 | 1.0561 | 1.0408 | 0.9796 | AveID | | 1.0181 | | | 5.2 | | 35.0 | | | | |
| Perfluorooctane Sulfonamide (FOSA) | 1.0272 0.8960 | 0.8713 0.7514 | 0.9579 | 0.9280 | 0.8811 | AveID | | 0.9018 | | | 9.5 | | 35.0 | | | | |
| 8:2FTS | 1.0464 0.8769 | 0.9600 0.7991 | 0.9720 | 0.8931 | 0.8273 | AveID | | 0.9107 | | | 9.6 | | 35.0 | | | | |
| Perfluorodecanoic acid (PFDA) | 1.1112 0.9934 | 0.9785 0.9171 | 0.9721 | 0.9707 | 0.9162 | AveID | | 0.9799 | | | 6.7 | | 35.0 | | | | |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | 0.8705 0.9391 | 0.9132 0.9213 | 0.8919 | 0.9276 | 0.9060 | AveID | | 0.9100 | | | 2.5 | | 35.0 | | | | |
| Perfluorodecanesulfonic acid (PFDS) | 0.6243 0.6204 | 0.6109 0.6007 | 0.6422 | 0.6351 | 0.6238 | AveID | | 0.6225 | | | 2.2 | | 50.0 | | | | |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | 0.8814 0.8445 | 0.8379 0.8378 | 0.8567 | 0.8398 | 0.8435 | AveID | | 0.8488 | | | 1.9 | | 35.0 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 1.2295 1.0508 | 1.1533 0.9719 | 1.0802 | 1.0299 | 1.0189 | L2ID | 0.1085 | 1.0255 | | | | | | 0.9990 | | 0.9900 | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
 LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
 CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|--|------------------|------------------|--------|--------|--------|------------|-------------|--------|----|---|---------|------|------|----------|------------|--------|----------------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| | LVL 6 | LVL 7 | | | | | | | | | | | | | | | |
| MeFOSA | 0.9495 0.9322 | 0.9226 0.9137 | 0.9323 | 0.8949 | 0.8832 | AveID | | 0.9183 | | | 2.5 | | 35.0 | | | | |
| Perfluorododecanoic acid (PFDoA) | 1.0282 0.8184 | 0.8102 0.9686 | 0.9356 | 0.9516 | 0.9917 | AveID | | 0.9292 | | | 9.0 | | 35.0 | | | | |
| N-EtFOSA-M | 0.9929 0.8945 | 0.9027 0.9325 | 0.9210 | 0.9341 | 0.9138 | AveID | | 0.9274 | | | 3.5 | | 35.0 | | | | |
| Perfluorotridecanoic Acid (PFTriA) | 0.9003 0.8527 | 0.8007 0.8199 | 0.8869 | 0.8608 | 0.8385 | AveID | | 0.8514 | | | 4.1 | | 50.0 | | | | |
| Perfluorotetradecanoic acid (PFTeA) | 2.0864 1.7552 | 2.2652 1.6691 | 2.0671 | 1.8798 | 1.7315 | AveID | | 1.9220 | | | 11.6 | | 50.0 | | | | |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | ++++ 0.8094 | 1.3172 0.8067 | 0.9121 | 0.7967 | 0.7855 | L2ID | 0.5273 | 0.7917 | | | | | | 1.0000 | | 0.9900 | |
| Perfluoro-n-octadecanoic acid (PFODA) | 0.9408 0.7740 | 0.6844 0.7651 | 0.7391 | 0.7194 | 0.7336 | AveID | | 0.7652 | | | 10.8 | | 50.0 | | | | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175476/3 | 2017.07.23ICAL_003.d |
| Level 2 | IC 320-175476/4 | 2017.07.23ICAL_004.d |
| Level 3 | IC 320-175476/5 | 2017.07.23ICAL_005.d |
| Level 4 | IC 320-175476/6 | 2017.07.23ICAL_006.d |
| Level 5 | IC 320-175476/7 | 2017.07.23ICAL_007.d |
| Level 6 | IC 320-175476/8 | 2017.07.23ICAL_008.d |
| Level 7 | IC 320-175476/9 | 2017.07.23ICAL_009.d |

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|-------------|------------|--------------------|--------------------|---------|---------|---------|-----------------------|----------------|-------|-------|-------|
| | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| 13C4 PFBA | Ave | 7602651 7747958 | 8198998 7209685 | 7724731 | 8240620 | 7884062 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C5 PFPeA | Ave | 5616511 5356421 | 5663549 4874149 | 5745028 | 5749559 | 5668374 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFHxA | Ave | 4962539 4765607 | 5341252 4793468 | 5205527 | 5262198 | 5074168 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C4-PFHpA | Ave | 4134680 4123520 | 4345666 3662996 | 4502179 | 4306431 | 4262989 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 1802 PFHxS | Ave | 6275582 6433219 | 6658501 6181226 | 6569473 | 6720545 | 6667053 | 47.3 47.3 | 47.3 47.3 | 47.3 | 47.3 | 47.3 |
| M2-6:2FTS | Ave | 2107584 2191385 | 2357266 2239134 | 2227990 | 2324738 | 2365496 | 47.5 47.5 | 47.5 47.5 | 47.5 | 47.5 | 47.5 |
| 13C4 PFOA | Ave | 4183627 3678248 | 4393535 3327722 | 4232863 | 4524447 | 4409764 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C4 PFOS | Ave | 5224495 5213679 | 5300156 5116508 | 5180018 | 5053172 | 5115538 | 47.8 47.8 | 47.8 47.8 | 47.8 | 47.8 | 47.8 |
| 13C5 PFNA | Ave | 3493409 3093351 | 3531702 2859301 | 3490997 | 3245282 | 3295100 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C8 FOSA | Ave | 9011527 8997387 | 9352506 8798953 | 9138842 | 9219278 | 9462080 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| M2-8:2FTS | Ave | 1761561 1666985 | 1701481 1732871 | 1748653 | 1765647 | 1861315 | 47.9 47.9 | 47.9 47.9 | 47.9 | 47.9 | 47.9 |
| 13C2 PFDA | Ave | 2736338 2576945 | 2960870 2614091 | 2973174 | 2858875 | 2822332 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d3-NMeFOSAA | Ave | 1050614 1068765 | 1049350 1133763 | 1090209 | 1065558 | 1147829 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d5-NEtFOSAA | Ave | 1093392 1068267 | 1132292 1056852 | 1136911 | 1132733 | 1055395 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFUnA | Ave | 2249395 1864568 | 2210040 1818459 | 2159853 | 2030463 | 1922444 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|--------------|------------|--------------------|--------------------|---------|---------|---------|-----------------------|----------------|-------|-------|-------|
| | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| d-N-MeFOSA-M | Ave | 2186880 2454402 | 2334174 2520018 | 2296036 | 2308671 | 2390079 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2 PFDoA | Ave | 2211449 2201944 | 2401406 2087489 | 2268225 | 2279772 | 2178974 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| d-N-EtFOSA-M | Ave | 2295325 2530450 | 2393195 2573945 | 2400939 | 2426441 | 2471592 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2-PFTeDA | Ave | 4329665 3733385 | 4366113 3714139 | 4237183 | 3931018 | 4114168 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |
| 13C2-PFHxDA | Ave | 2022870 2075916 | 2129628 1923205 | 2088906 | 2169354 | 2047502 | 50.0 50.0 | 50.0 50.0 | 50.0 | 50.0 | 50.0 |

Curve Type Legend:

Ave = Average

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|----------------------|
| Level 1 | IC 320-175476/3 | 2017.07.23ICAL_003.d |
| Level 2 | IC 320-175476/4 | 2017.07.23ICAL_004.d |
| Level 3 | IC 320-175476/5 | 2017.07.23ICAL_005.d |
| Level 4 | IC 320-175476/6 | 2017.07.23ICAL_006.d |
| Level 5 | IC 320-175476/7 | 2017.07.23ICAL_007.d |
| Level 6 | IC 320-175476/8 | 2017.07.23ICAL_008.d |
| Level 7 | IC 320-175476/9 | 2017.07.23ICAL_009.d |

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|---------------------------------------|--------|------------|-------------------|--------------------|--------|---------|---------|-----------------------|----------------|-------|-------|-------|
| | | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| Perfluorobutanoic acid (PFBA) | | AveID | 69975 12999409 | 147752 21295694 | 749523 | 3038741 | 6963312 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | | AveID | 74351 10886829 | 119448 17506811 | 596471 | 2299701 | 5464599 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | | AveID | 99684 16053252 | 192335 26901153 | 990268 | 3988481 | 9206165 | 0.442 88.4 | 0.884 177 | 4.42 | 17.7 | 44.2 |
| 4:2 FTS | | AveID | 24392 4075896 | 42922 7430551 | 227509 | 865853 | 2141036 | 0.467 93.4 | 0.934 187 | 4.67 | 18.7 | 46.7 |
| Perfluorohexanoic acid (PFHxA) | | AveID | 53254 8788456 | 101614 16363337 | 510606 | 1995591 | 4748124 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | | AveID | 50421 7914021 | 92990 14130024 | 453995 | 1717995 | 4116140 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | | AveID | 80894 12621118 | 148222 23173026 | 662781 | 2654948 | 6455854 | 0.455 91.0 | 0.910 182 | 4.55 | 18.2 | 45.5 |
| 6:2FTS | | AveID | 20482 3742357 | 45441 6779939 | 208291 | 845572 | 2050076 | 0.474 94.8 | 0.948 190 | 4.74 | 19.0 | 47.4 |
| Perfluorooctanoic acid (PFOA) | | AveID | 48556 7841830 | 88318 13780241 | 454115 | 2007679 | 4489705 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | | AveID | 60184 10965918 | 119224 20645661 | 604887 | 2397725 | 5765727 | 0.476 95.2 | 0.952 190 | 4.76 | 19.0 | 47.6 |
| Perfluorooctanesulfonic acid (PFOS) | | AveID | 57301 10055816 | 109083 20749676 | 547466 | 2093353 | 5048139 | 0.464 92.8 | 0.928 186 | 4.64 | 18.6 | 46.4 |
| Perfluorononanoic acid (PFNA) | | AveID | 38591 6011197 | 71952 10926680 | 368688 | 1351075 | 3227789 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | | AveID | 92569 16123202 | 162978 26444981 | 875387 | 3422187 | 8336711 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| 8:2FTS | | AveID | 18433 2923571 | 32668 5538945 | 169963 | 630739 | 1539793 | 0.479 95.8 | 0.958 192 | 4.79 | 19.2 | 47.9 |
| Perfluorodecanoic acid (PFDA) | | AveID | 30405 5119744 | 57947 9589389 | 289035 | 1110082 | 2585881 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|--|--------|------------|------------------|--------------------|--------|---------|---------|-----------------------|----------------|-------|-------|-------|
| | | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | | AveID | 9146 2007359 | 19166 4177961 | 97239 | 395381 | 1039957 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | | AveID | 32887 6522922 | 65294 12396187 | 335448 | 1294446 | 3217983 | 0.482 96.4 | 0.964 193 | 4.82 | 19.3 | 48.2 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | | AveID | 9637 1804400 | 18976 3541684 | 97401 | 380509 | 890173 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | | L2ID | 27657 3918710 | 50978 7069518 | 233311 | 836437 | 1958756 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| MeFOSA | | AveID | 20765 4575819 | 43069 9209985 | 214053 | 826400 | 2110821 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | | AveID | 22738 3604171 | 38911 8087946 | 212214 | 867758 | 2160889 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| N-EtFOSA-M | | AveID | 22791 4527078 | 43208 9600643 | 221116 | 906622 | 2258565 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | | AveID | 19909 3755028 | 38455 6846516 | 201160 | 784927 | 1827022 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | | AveID | 46140 7729497 | 108795 13936575 | 468872 | 1714163 | 3772981 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | | L2ID | +++++ 3564510 | 63261 6735864 | 206894 | 726480 | 1711676 | +++++ 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | | AveID | 20805 3408805 | 32872 6388834 | 167649 | 655993 | 1598412 | 0.500 100 | 1.00 200 | 5.00 | 20.0 | 50.0 |

Curve Type Legend:

| |
|----------------------------------|
| AveID = Average isotope dilution |
| L2ID = Linear 1/conc^2 IsoDil |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: ICV 320-175476/12 Calibration Date: 07/23/2017 14:12
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23ICAL_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9506 | | 53.4 | 49.5 | 7.8 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.048 | | 49.8 | 49.5 | 0.6 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.590 | | 46.8 | 43.8 | 6.8 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 1.064 | | 55.3 | 49.5 | 11.7 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.096 | | 52.9 | 49.5 | 6.8 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.064 | | 46.0 | 46.8 | -1.7 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8826 | | 46.2 | 46.9 | -1.5 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.145 | | 53.1 | 49.5 | 7.3 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.189 | | 50.0 | 47.1 | 6.0 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 1.057 | | 51.4 | 49.5 | 3.8 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 0.9909 | | 44.3 | 47.3 | -6.3 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 1.006 | | 55.2 | 49.5 | 11.5 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9482 | | 49.4 | 47.4 | 4.1 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 1.021 | | 51.6 | 49.5 | 4.2 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 1.004 | | 54.6 | 49.5 | 10.3 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.7165 | | 55.0 | 47.8 | 15.1 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.9413 | | 54.9 | 49.5 | 10.9 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.065 | | 51.3 | 49.5 | 3.6 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.9367 | | 50.5 | 49.5 | 2.0 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 1.075 | | 57.3 | 49.5 | 15.7 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 1.041 | | 55.6 | 49.5 | 12.2 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.9886 | | 57.5 | 49.5 | 16.1 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.177 | | 56.1 | 49.5 | 13.3 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8767 | | 54.2 | 49.5 | 9.4 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8436 | | 54.6 | 49.5 | 10.2 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 157873 | | 50.1 | 49.5 | 1.2 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 108697 | | 48.7 | 49.5 | -1.6 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 98061 | | 48.0 | 49.5 | -3.1 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 83605 | | 49.4 | 49.5 | -0.3 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 142796 | | 48.7 | 46.8 | 3.9 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 48376 | | 47.8 | 47.0 | 1.7 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: ICV 320-175476/12 Calibration Date: 07/23/2017 14:12
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23ICAL_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|-------|--------|
| 13C4 PFOA | Ave | 82143 | 77215 | | 46.5 | 49.5 | -6.0 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 104794 | | 45.8 | 47.3 | -3.1 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 60434 | | 45.5 | 49.5 | -8.1 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 161974 | | 43.9 | 49.5 | -11.4 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 35620 | | 46.3 | 47.4 | -2.4 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 55227 | | 49.0 | 49.5 | -1.1 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 20364 | | 46.4 | 49.5 | -6.3 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 38417 | | 46.7 | 49.5 | -5.7 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 21506 | | 48.5 | 49.5 | -1.9 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 46615 | | 49.0 | 49.5 | -1.1 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 37731 | | 41.8 | 49.5 | -15.5 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 45694 | | 46.3 | 49.5 | -6.4 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 74362 | | 45.3 | 49.5 | -8.4 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 34907 | | 41.8 | 49.5 | -15.5 | 50.0 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/23/2017 14:32

Analysis Batch Number: 175528 End Date: 07/23/2017 17:18

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---------------------|------------------|------------------|-----------------|-------------------|-----------------------|
| CCV 320-175528/1 | | 07/23/2017 14:32 | 1 | 2017.07.23A_001.d | GeminiC18 3x100 3(mm) |
| MB 320-175097/1-A | | 07/23/2017 14:39 | 1 | 2017.07.23A_002.d | GeminiC18 3x100 3(mm) |
| LCS 320-175097/2-A | | 07/23/2017 14:46 | 1 | 2017.07.23A_003.d | GeminiC18 3x100 3(mm) |
| LCSD 320-175097/3-A | | 07/23/2017 14:53 | 1 | 2017.07.23A_004.d | GeminiC18 3x100 3(mm) |
| CCV 320-175528/12 | | 07/23/2017 15:48 | 1 | 2017.07.23A_012.d | GeminiC18 3x100 3(mm) |
| 320-29732-1 | | 07/23/2017 16:16 | 1 | 2017.07.23A_016.d | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/23/2017 16:23 | 1 | | GeminiC18 3x100 3(mm) |
| 320-29732-3 | | 07/23/2017 16:30 | 1 | 2017.07.23A_018.d | GeminiC18 3x100 3(mm) |
| CCV 320-175528/21 | | 07/23/2017 16:50 | 1 | 2017.07.23A_021.d | GeminiC18 3x100 3(mm) |
| CCV 320-175528/25 | | 07/23/2017 17:18 | 1 | | GeminiC18 3x100 3(mm) |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/1 Calibration Date: 07/23/2017 14:32
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9494 | | 21.5 | 20.0 | 7.6 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 0.9792 | | 18.8 | 20.0 | -6.0 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.501 | | 17.8 | 17.7 | 0.8 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9645 | | 20.3 | 20.0 | 1.3 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.025 | | 20.0 | 20.0 | -0.1 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.015 | | 17.1 | 18.2 | -6.2 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.9016 | | 19.1 | 19.0 | 0.6 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.185 | | 20.1 | 19.0 | 5.6 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.072 | | 20.1 | 20.0 | 0.5 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.023 | | 18.0 | 18.6 | -3.2 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9787 | | 19.2 | 20.0 | -3.9 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9893 | | 20.8 | 19.2 | 8.6 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9496 | | 21.1 | 20.0 | 5.3 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9576 | | 19.5 | 20.0 | -2.3 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9797 | | 21.5 | 20.0 | 7.7 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6356 | | 19.7 | 19.3 | 2.1 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8613 | | 20.3 | 20.0 | 1.5 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 0.9846 | | 19.1 | 20.0 | -4.5 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.9054 | | 19.7 | 20.0 | -1.4 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.8874 | | 19.1 | 20.0 | -4.5 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.8972 | | 19.3 | 20.0 | -3.3 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8317 | | 19.5 | 20.0 | -2.3 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.773 | | 18.4 | 20.0 | -7.8 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8414 | | 20.6 | 20.0 | 2.9 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.7982 | | 20.9 | 20.0 | 4.3 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 165858 | | 53.2 | 50.0 | 6.3 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 115893 | | 52.4 | 50.0 | 4.9 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 100943 | | 49.9 | 50.0 | -0.2 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 86101 | | 51.4 | 50.0 | 2.7 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 143304 | | 49.3 | 47.3 | 4.3 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 46861 | | 46.8 | 47.5 | -1.5 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/1 Calibration Date: 07/23/2017 14:32
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 85050 | | 51.8 | 50.0 | 3.5 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 109417 | | 48.3 | 47.8 | 1.1 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 69516 | | 52.9 | 50.0 | 5.7 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 182496 | | 49.9 | 50.0 | -0.2 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 34084 | | 44.7 | 47.9 | -6.6 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 57163 | | 51.2 | 50.0 | 2.4 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 20701 | | 47.6 | 50.0 | -4.7 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 39583 | | 48.6 | 50.0 | -2.8 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 21686 | | 49.4 | 50.0 | -1.1 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 45773 | | 48.6 | 50.0 | -2.8 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 41237 | | 46.2 | 50.0 | -7.7 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 48692 | | 49.9 | 50.0 | -0.3 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 74066 | | 45.6 | 50.0 | -8.8 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 39421 | | 47.7 | 50.0 | -4.6 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/12 Calibration Date: 07/23/2017 15:48
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9029 | | 51.2 | 50.0 | 2.4 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.006 | | 48.3 | 50.0 | -3.5 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.478 | | 43.9 | 44.2 | -0.7 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9398 | | 49.4 | 50.0 | -1.3 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9913 | | 48.3 | 50.0 | -3.4 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.034 | | 43.5 | 45.5 | -4.4 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8465 | | 44.8 | 47.4 | -5.5 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 0.9815 | | 46.0 | 50.0 | -8.0 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.119 | | 47.5 | 47.6 | -0.2 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 1.012 | | 49.7 | 50.0 | -0.6 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.023 | | 44.9 | 46.4 | -3.2 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.8344 | | 43.9 | 47.9 | -8.4 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9414 | | 48.0 | 50.0 | -3.9 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9253 | | 51.3 | 50.0 | 2.6 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.8838 | | 48.6 | 50.0 | -2.9 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.5885 | | 45.6 | 48.2 | -5.5 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8455 | | 49.8 | 50.0 | -0.4 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 0.9582 | | 46.6 | 50.0 | -6.8 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8759 | | 47.7 | 50.0 | -4.6 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.8987 | | 48.4 | 50.0 | -3.3 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9011 | | 48.6 | 50.0 | -2.8 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8566 | | 50.3 | 50.0 | 0.6 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.865 | | 48.5 | 50.0 | -3.0 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8124 | | 50.6 | 50.0 | 1.3 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8180 | | 53.5 | 50.0 | 6.9 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 168207 | | 53.9 | 50.0 | 7.8 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 115246 | | 52.1 | 50.0 | 4.3 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 101804 | | 50.3 | 50.0 | 0.6 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 86264 | | 51.5 | 50.0 | 2.9 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 140919 | | 48.5 | 47.3 | 2.5 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 48401 | | 48.3 | 47.5 | 1.8 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/12 Calibration Date: 07/23/2017 15:48
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|-------|--------|
| 13C4 PFOA | Ave | 82143 | 84609 | | 51.5 | 50.0 | 3.0 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 110381 | | 48.8 | 47.8 | 2.0 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 63063 | | 48.0 | 50.0 | -4.1 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 36015 | | 47.3 | 47.9 | -1.3 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 53544 | | 47.9 | 50.0 | -4.1 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 180199 | | 49.3 | 50.0 | -1.4 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 21364 | | 49.2 | 50.0 | -1.7 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 20780 | | 47.4 | 50.0 | -5.2 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 39142 | | 48.1 | 50.0 | -3.9 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 47791 | | 50.7 | 50.0 | 1.4 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 38225 | | 42.8 | 50.0 | -14.4 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 50866 | | 52.1 | 50.0 | 4.2 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 80494 | | 49.6 | 50.0 | -0.9 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 38552 | | 46.7 | 50.0 | -6.7 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/21 Calibration Date: 07/23/2017 16:50
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_021.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9379 | | 21.3 | 20.0 | 6.3 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.031 | | 19.8 | 20.0 | -1.1 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.503 | | 17.8 | 17.7 | 0.9 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9232 | | 19.4 | 20.0 | -3.0 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9873 | | 19.2 | 20.0 | -3.8 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.013 | | 17.0 | 18.2 | -6.4 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8597 | | 18.2 | 19.0 | -4.0 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.043 | | 19.6 | 20.0 | -2.2 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.243 | | 21.1 | 19.0 | 10.8 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 1.020 | | 20.0 | 20.0 | 0.2 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.048 | | 18.4 | 18.6 | -0.9 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9236 | | 19.4 | 19.2 | 1.4 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9608 | | 19.6 | 20.0 | -2.0 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9238 | | 20.5 | 20.0 | 2.4 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9171 | | 20.2 | 20.0 | 0.8 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6369 | | 19.7 | 19.3 | 2.3 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8432 | | 19.9 | 20.0 | -0.7 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.050 | | 20.4 | 20.0 | 1.9 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8819 | | 19.2 | 20.0 | -4.0 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.8799 | | 18.9 | 20.0 | -5.3 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.8905 | | 19.2 | 20.0 | -4.0 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.9621 | | 22.6 | 20.0 | 13.0 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.128 | | 22.1 | 20.0 | 10.7 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8696 | | 21.3 | 20.0 | 6.5 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8649 | | 22.6 | 20.0 | 13.0 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 173888 | | 55.7 | 50.0 | 11.4 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 117948 | | 53.4 | 50.0 | 6.7 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 103863 | | 51.3 | 50.0 | 2.7 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 89637 | | 53.5 | 50.0 | 6.9 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 145465 | | 50.1 | 47.3 | 5.8 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 49323 | | 49.3 | 47.5 | 3.7 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175528/21 Calibration Date: 07/23/2017 16:50
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.23A_021.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|-------|--------|
| 13C4 PFOA | Ave | 82143 | 84145 | | 51.2 | 50.0 | 2.4 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 104664 | | 46.2 | 47.8 | -3.3 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 62537 | | 47.6 | 50.0 | -4.9 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 34924 | | 45.8 | 47.9 | -4.3 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 54622 | | 48.9 | 50.0 | -2.2 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 181189 | | 49.6 | 50.0 | -0.9 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 20224 | | 46.5 | 50.0 | -6.9 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 21268 | | 48.5 | 50.0 | -3.0 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 36927 | | 45.3 | 50.0 | -9.3 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 46769 | | 49.6 | 50.0 | -0.7 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 37023 | | 41.5 | 50.0 | -17.1 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 48239 | | 49.4 | 50.0 | -1.2 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 71157 | | 43.8 | 50.0 | -12.4 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 35798 | | 43.3 | 50.0 | -13.3 | 50.0 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/24/2017 11:42

Analysis Batch Number: 175631 End Date: 07/24/2017 12:23

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|-----------------------|-----------------------|
| CCVL 320-175631/2 | | 07/24/2017 11:42 | 1 | 2017.07.24A_004 .d | GeminiC18 3x100 3(mm) |
| CCV 320-175631/3 | | 07/24/2017 11:49 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/24/2017 11:56 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/24/2017 12:02 | 5 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/24/2017 12:09 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/24/2017 12:16 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175631/8 | | 07/24/2017 12:23 | 1 | | GeminiC18 3x100 3(mm) |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175631/2 Calibration Date: 07/24/2017 11:42
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24A_004.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9430 | | 1.07 | 1.00 | 6.9 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.068 | | 1.02 | 1.00 | 2.5 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.485 | | 0.881 | 0.884 | -0.3 | 50.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9823 | | 1.03 | 1.00 | 3.2 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.035 | | 1.01 | 1.00 | 0.8 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.177 | | 0.990 | 0.910 | 8.8 | 50.0 |
| 6:2FTS | AveID | 0.8958 | 1.066 | | 1.13 | 0.948 | 19.0 | 50.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.050 | | 0.985 | 1.00 | -1.5 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.167 | | 0.991 | 0.952 | 4.1 | 50.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9560 | | 0.939 | 1.00 | -6.1 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.478 | | 1.30 | 0.928 | 39.8 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9118 | | 1.01 | 1.00 | 1.1 | 50.0 |
| 8:2FTS | AveID | 0.9107 | 0.9012 | | 0.948 | 0.958 | -1.0 | 50.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9261 | | 0.945 | 1.00 | -5.5 | 50.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.8950 | | 0.984 | 1.00 | -1.6 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6623 | | 1.03 | 0.964 | 6.4 | 50.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.7597 | | 0.895 | 1.00 | -10.5 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.159 | | 1.02 | 1.00 | 2.4 | 50.0 |
| MeFOSA | AveID | 0.9183 | 0.9275 | | 1.01 | 1.00 | 1.0 | 50.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9449 | | 1.02 | 1.00 | 1.9 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9052 | | 0.974 | 1.00 | -2.6 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.9070 | | 1.07 | 1.00 | 6.5 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.397 | | 1.25 | 1.00 | 24.7 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 1.714 | | 1.50 | 1.00 | 49.9 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8116 | | 1.06 | 1.00 | 6.1 | 50.0 |
| 13C4 PFBA | Ave | 156025 | 162534 | | 52.1 | 50.0 | 4.2 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 121488 | | 55.0 | 50.0 | 9.9 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 126892 | | 62.7 | 50.0 | 25.4 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 105586 | | 63.0 | 50.0 | 26.0 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 151531 | | 52.2 | 47.3 | 10.3 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 55947 | | 55.9 | 47.5 | 17.6 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175631/2 Calibration Date: 07/24/2017 11:42
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24A_004.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 102277 | | 62.3 | 50.0 | 24.5 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 114047 | | 50.4 | 47.8 | 5.4 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 81651 | | 62.1 | 50.0 | 24.2 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 190075 | | 52.0 | 50.0 | 4.0 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 50747 | | 66.6 | 47.9 | 39.0 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 79839 | | 71.5 | 50.0 | 43.0 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 26929 | | 62.0 | 50.0 | 23.9 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 28325 | | 64.6 | 50.0 | 29.2 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 59002 | | 72.4 | 50.0 | 44.9 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 47583 | | 50.5 | 50.0 | 1.0 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 47900 | | 49.0 | 50.0 | -1.9 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 55751 | | 62.4 | 50.0 | 24.8 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 108030 | | 66.5 | 50.0 | 33.0 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 56461 | | 68.3 | 50.0 | 36.7 | 50.0 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/24/2017 20:00

Analysis Batch Number: 175757 End Date: 07/24/2017 20:21

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|------------------|------------------|------------------|-----------------|------------------------|-----------------------|
| CCV 320-175757/1 | | 07/24/2017 20:00 | 1 | 2017.07.24AA_02 8.d | GeminiC18 3x100 3(mm) |
| 320-29732-1 DL | | 07/24/2017 20:07 | 10 | 2017.07.24AA_02 9.d | GeminiC18 3x100 3(mm) |
| 320-29732-2 | | 07/24/2017 20:14 | 1 | 2017.07.24AA_03 0.d | GeminiC18 3x100 3(mm) |
| CCV 320-175757/4 | | 07/24/2017 20:21 | 1 | 2017.07.24AA_03 1.d | GeminiC18 3x100 3(mm) |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175757/1 Calibration Date: 07/24/2017 20:00
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24AA_028.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9374 | | 53.1 | 50.0 | 6.3 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 0.9923 | | 47.6 | 50.0 | -4.8 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.511 | | 44.9 | 44.2 | 1.5 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9065 | | 47.6 | 50.0 | -4.8 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9777 | | 47.6 | 50.0 | -4.7 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 0.9858 | | 41.5 | 45.5 | -8.9 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8518 | | 45.1 | 47.4 | -4.9 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 0.9891 | | 46.4 | 50.0 | -7.3 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.253 | | 53.2 | 47.6 | 11.7 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9508 | | 46.7 | 50.0 | -6.6 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.038 | | 45.5 | 46.4 | -1.9 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.8680 | | 45.7 | 47.9 | -4.7 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.8948 | | 49.6 | 50.0 | -0.8 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9289 | | 47.4 | 50.0 | -5.2 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9241 | | 50.8 | 50.0 | 1.5 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6731 | | 52.1 | 48.2 | 8.1 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8254 | | 48.6 | 50.0 | -2.8 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 0.9616 | | 46.8 | 50.0 | -6.4 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8895 | | 48.4 | 50.0 | -3.1 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.8254 | | 44.4 | 50.0 | -11.2 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9129 | | 49.2 | 50.0 | -1.6 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8610 | | 50.6 | 50.0 | 1.1 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.879 | | 48.9 | 50.0 | -2.2 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8600 | | 53.7 | 50.0 | 7.3 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8788 | | 57.4 | 50.0 | 14.8 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 161351 | | 51.7 | 50.0 | 3.4 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 114786 | | 51.9 | 50.0 | 3.9 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 109880 | | 54.3 | 50.0 | 8.6 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 91403 | | 54.5 | 50.0 | 9.0 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 138032 | | 47.5 | 47.3 | 0.4 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 46183 | | 46.1 | 47.5 | -2.9 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175757/1 Calibration Date: 07/24/2017 20:00
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24AA_028.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|-------|--------|
| 13C4 PFOA | Ave | 82143 | 86191 | | 52.5 | 50.0 | 4.9 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 96791 | | 42.8 | 47.8 | -10.5 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 66393 | | 50.5 | 50.0 | 1.0 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 170266 | | 46.6 | 50.0 | -6.9 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 32386 | | 42.5 | 47.9 | -11.3 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 54898 | | 49.2 | 50.0 | -1.7 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 19126 | | 44.0 | 50.0 | -12.0 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 21026 | | 47.9 | 50.0 | -4.1 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 41702 | | 51.2 | 50.0 | 2.4 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 45477 | | 48.3 | 50.0 | -3.5 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 42599 | | 47.7 | 50.0 | -4.6 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 47505 | | 48.6 | 50.0 | -2.7 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 82254 | | 50.6 | 50.0 | 1.3 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 44625 | | 54.0 | 50.0 | 8.0 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175757/4 Calibration Date: 07/24/2017 20:21
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24AA_031.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9212 | | 20.9 | 20.0 | 4.4 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.022 | | 19.6 | 20.0 | -1.9 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.608 | | 19.1 | 17.7 | 8.0 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9205 | | 19.3 | 20.0 | -3.3 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.002 | | 19.5 | 20.0 | -2.4 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.012 | | 17.0 | 18.2 | -6.4 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8829 | | 18.7 | 19.0 | -1.4 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.262 | | 21.4 | 19.0 | 12.5 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.051 | | 19.7 | 20.0 | -1.5 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9643 | | 18.9 | 20.0 | -5.3 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.065 | | 18.7 | 18.6 | 0.8 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9202 | | 19.4 | 19.2 | 1.1 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9315 | | 20.7 | 20.0 | 3.3 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.8900 | | 18.2 | 20.0 | -9.2 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9110 | | 20.0 | 20.0 | 0.1 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6850 | | 21.2 | 19.3 | 10.1 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8562 | | 20.2 | 20.0 | 0.9 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.076 | | 20.9 | 20.0 | 4.4 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8960 | | 19.5 | 20.0 | -2.4 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9904 | | 21.3 | 20.0 | 6.6 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9344 | | 20.2 | 20.0 | 0.8 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 1.037 | | 24.4 | 20.0 | 21.8 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.390 | | 24.9 | 20.0 | 24.3 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 1.217 | | 30.1 | 20.0 | 50.4* | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 1.104 | | 28.8 | 20.0 | 44.2* | 25.0 |
| 13C4 PFBA | Ave | 156025 | 170093 | | 54.5 | 50.0 | 9.0 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 120405 | | 54.5 | 50.0 | 9.0 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 113025 | | 55.9 | 50.0 | 11.7 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 94663 | | 56.5 | 50.0 | 12.9 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 138985 | | 47.8 | 47.3 | 1.1 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 45911 | | 45.9 | 47.5 | -3.5 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175757/4 Calibration Date: 07/24/2017 20:21
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.24AA_031.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|-------|--------|
| 13C4 PFOA | Ave | 82143 | 88695 | | 54.0 | 50.0 | 8.0 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 100104 | | 44.2 | 47.8 | -7.5 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 69492 | | 52.9 | 50.0 | 5.7 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 177867 | | 48.7 | 50.0 | -2.7 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 34924 | | 45.8 | 47.9 | -4.3 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 61632 | | 55.2 | 50.0 | 10.4 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 20578 | | 47.3 | 50.0 | -5.3 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 21152 | | 48.2 | 50.0 | -3.6 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 45507 | | 55.9 | 50.0 | 11.7 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 45766 | | 48.6 | 50.0 | -2.9 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 46012 | | 51.5 | 50.0 | 3.0 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 47471 | | 48.6 | 50.0 | -2.8 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 109330 | | 67.3 | 50.0 | 34.6 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 63303 | | 76.6 | 50.0 | 53.3* | 50.0 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/25/2017 09:27

Analysis Batch Number: 175762 End Date: 07/25/2017 10:02

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|-------------------|-----------------------|
| CCVL 320-175762/3 | | 07/25/2017 09:27 | 1 | 2017.07.25A_003.d | GeminiC18 3x100 3(mm) |
| CCV 320-175762/4 | | 07/25/2017 09:34 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/25/2017 09:41 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/25/2017 09:48 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/25/2017 09:55 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175762/8 | | 07/25/2017 10:02 | 1 | | GeminiC18 3x100 3(mm) |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175762/3 Calibration Date: 07/25/2017 09:27
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25A_003.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9681 | | 1.10 | 1.00 | 9.8 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.119 | | 1.07 | 1.00 | 7.4 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.535 | | 0.911 | 0.884 | 3.1 | 50.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9504 | | 0.998 | 1.00 | -0.2 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.044 | | 1.02 | 1.00 | 1.7 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.224 | | 1.03 | 0.910 | 13.1 | 50.0 |
| 6:2FTS | AveID | 0.8958 | 0.996 | | 1.05 | 0.948 | 11.1 | 50.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.128 | | 1.06 | 1.00 | 5.7 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.116 | | 0.947 | 0.952 | -0.5 | 50.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9433 | | 0.926 | 1.00 | -7.4 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.044 | | 0.916 | 0.928 | -1.3 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.8915 | | 0.989 | 1.00 | -1.1 | 50.0 |
| 8:2FTS | AveID | 0.9107 | 0.9455 | | 0.995 | 0.958 | 3.8 | 50.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9836 | | 1.00 | 1.00 | 0.4 | 50.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9190 | | 1.01 | 1.00 | 1.0 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6370 | | 0.986 | 0.964 | 2.3 | 50.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8198 | | 0.966 | 1.00 | -3.4 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.091 | | 0.958 | 1.00 | -4.2 | 50.0 |
| MeFOSA | AveID | 0.9183 | 0.8995 | | 0.979 | 1.00 | -2.1 | 50.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.8837 | | 0.953 | 1.00 | -4.7 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9726 | | 1.05 | 1.00 | 4.7 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8843 | | 1.04 | 1.00 | 3.9 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.498 | | 1.30 | 1.00 | 30.0 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 1.554 | | 1.30 | 1.00 | 29.7 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.7522 | | 0.983 | 1.00 | -1.7 | 50.0 |
| 13C4 PFBA | Ave | 156025 | 150441 | | 48.2 | 50.0 | -3.6 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 112401 | | 50.9 | 50.0 | 1.7 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 104323 | | 51.6 | 50.0 | 3.1 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 89432 | | 53.3 | 50.0 | 6.7 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 135009 | | 46.5 | 47.3 | -1.8 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 42852 | | 42.8 | 47.5 | -9.9 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-175762/3 Calibration Date: 07/25/2017 09:27
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25A_003.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 88017 | | 53.6 | 50.0 | 7.1 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 108099 | | 47.8 | 47.8 | -0.0 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 72808 | | 55.4 | 50.0 | 10.8 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 181464 | | 49.6 | 50.0 | -0.7 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 34031 | | 44.7 | 47.9 | -6.8 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 63109 | | 56.5 | 50.0 | 13.0 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 20921 | | 48.1 | 50.0 | -3.7 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 46713 | | 57.3 | 50.0 | 14.7 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 22474 | | 51.2 | 50.0 | 2.5 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 44961 | | 47.7 | 50.0 | -4.6 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 45113 | | 46.2 | 50.0 | -7.6 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 46192 | | 51.7 | 50.0 | 3.4 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 88642 | | 54.6 | 50.0 | 9.1 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 43303 | | 52.4 | 50.0 | 4.8 | 50.0 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/25/2017 14:10

Analysis Batch Number: 175951 End Date: 07/25/2017 17:10

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---------------------|------------------|------------------|-----------------|-------------------|-----------------------|
| CCV 320-175951/1 | | 07/25/2017 14:10 | 1 | 2017.07.25B_001.d | GeminiC18 3x100 3(mm) |
| MB 320-175074/1-A | | 07/25/2017 14:17 | 1 | 2017.07.25B_002.d | GeminiC18 3x100 3(mm) |
| LCS 320-175074/2-A | | 07/25/2017 14:24 | 1 | 2017.07.25B_003.d | GeminiC18 3x100 3(mm) |
| LCSD 320-175074/3-A | | 07/25/2017 14:31 | 1 | 2017.07.25B_004.d | GeminiC18 3x100 3(mm) |
| 320-29732-1 RE | | 07/25/2017 15:05 | 1 | 2017.07.25B_009.d | GeminiC18 3x100 3(mm) |
| 320-29732-2 RE | | 07/25/2017 15:12 | 1 | 2017.07.25B_010.d | GeminiC18 3x100 3(mm) |
| 320-29732-3 RE | | 07/25/2017 15:19 | 1 | 2017.07.25B_011.d | GeminiC18 3x100 3(mm) |
| CCV 320-175951/12 | | 07/25/2017 15:26 | 1 | 2017.07.25B_012.d | GeminiC18 3x100 3(mm) |
| CCV 320-175951/23 | | 07/25/2017 16:42 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-175951/27 | | 07/25/2017 17:10 | 1 | | GeminiC18 3x100 3(mm) |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175951/1 Calibration Date: 07/25/2017 14:10
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25B_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 1.032 | | 23.4 | 20.0 | 17.0 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.052 | | 20.2 | 20.0 | 1.0 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.537 | | 18.2 | 17.7 | 3.2 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9547 | | 20.1 | 20.0 | 0.3 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.005 | | 19.6 | 20.0 | -2.1 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.021 | | 17.2 | 18.2 | -5.6 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8787 | | 18.6 | 19.0 | -1.9 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.024 | | 19.2 | 20.0 | -4.0 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.189 | | 20.2 | 19.0 | 6.0 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9903 | | 19.5 | 20.0 | -2.7 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.070 | | 18.8 | 18.6 | 1.2 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9275 | | 19.5 | 19.2 | 1.9 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9007 | | 20.0 | 20.0 | -0.1 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9232 | | 18.8 | 20.0 | -5.8 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.8955 | | 19.7 | 20.0 | -1.6 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6495 | | 20.1 | 19.3 | 4.3 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8798 | | 20.7 | 20.0 | 3.7 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.027 | | 19.9 | 20.0 | -0.4 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.9266 | | 20.2 | 20.0 | 0.9 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9665 | | 20.8 | 20.0 | 4.0 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9108 | | 19.6 | 20.0 | -1.8 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8304 | | 19.5 | 20.0 | -2.5 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.048 | | 21.3 | 20.0 | 6.6 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.9091 | | 22.3 | 20.0 | 11.5 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8119 | | 21.2 | 20.0 | 6.1 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 160885 | | 51.6 | 50.0 | 3.1 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 115508 | | 52.3 | 50.0 | 4.5 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 110279 | | 54.5 | 50.0 | 9.0 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 97166 | | 58.0 | 50.0 | 15.9 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 149216 | | 51.4 | 47.3 | 8.6 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 45868 | | 45.8 | 47.5 | -3.6 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175951/1 Calibration Date: 07/25/2017 14:10
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25B_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 91461 | | 55.7 | 50.0 | 11.3 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 108341 | | 47.9 | 47.8 | 0.1 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 71588 | | 54.4 | 50.0 | 8.9 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 34518 | | 45.3 | 47.9 | -5.4 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 184132 | | 50.4 | 50.0 | 0.7 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 61094 | | 54.7 | 50.0 | 9.4 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 21835 | | 50.2 | 50.0 | 0.5 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 45084 | | 55.3 | 50.0 | 10.7 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 22089 | | 50.4 | 50.0 | 0.7 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 45309 | | 48.1 | 50.0 | -3.8 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 44365 | | 49.7 | 50.0 | -0.6 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 46316 | | 47.4 | 50.0 | -5.2 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 87004 | | 53.6 | 50.0 | 7.1 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 44771 | | 54.2 | 50.0 | 8.4 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175951/12 Calibration Date: 07/25/2017 15:26
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25B_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9454 | | 53.6 | 50.0 | 7.2 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.023 | | 49.1 | 50.0 | -1.9 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.488 | | 44.2 | 44.2 | -0.0 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.8958 | | 47.0 | 50.0 | -5.9 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9784 | | 47.7 | 50.0 | -4.7 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.006 | | 42.3 | 45.5 | -7.1 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8577 | | 45.4 | 47.4 | -4.3 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.011 | | 47.4 | 50.0 | -5.2 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.165 | | 49.5 | 47.6 | 3.9 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.032 | | 45.3 | 46.4 | -2.4 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9003 | | 44.2 | 50.0 | -11.6 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.8913 | | 46.9 | 47.9 | -2.1 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9503 | | 48.5 | 50.0 | -3.0 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9013 | | 50.0 | 50.0 | -0.0 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9250 | | 50.8 | 50.0 | 1.7 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6416 | | 49.7 | 48.2 | 3.1 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8372 | | 49.3 | 50.0 | -1.4 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.009 | | 49.1 | 50.0 | -1.8 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8728 | | 47.5 | 50.0 | -5.0 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.8897 | | 47.9 | 50.0 | -4.2 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9226 | | 49.7 | 50.0 | -0.5 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8932 | | 52.5 | 50.0 | 4.9 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.028 | | 52.8 | 50.0 | 5.5 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.8189 | | 51.1 | 50.0 | 2.1 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8205 | | 53.6 | 50.0 | 7.2 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 157364 | | 50.4 | 50.0 | 0.9 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 114276 | | 51.7 | 50.0 | 3.4 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 112682 | | 55.7 | 50.0 | 11.4 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 94165 | | 56.2 | 50.0 | 12.3 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 148491 | | 51.1 | 47.3 | 8.0 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 45465 | | 45.4 | 47.5 | -4.4 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-175951/12 Calibration Date: 07/25/2017 15:26
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.25B_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 89959 | | 54.8 | 50.0 | 9.5 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 108150 | | 47.8 | 47.8 | -0.0 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 71522 | | 54.4 | 50.0 | 8.8 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 175839 | | 48.1 | 50.0 | -3.8 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 33302 | | 43.7 | 47.9 | -8.8 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 58717 | | 52.6 | 50.0 | 5.2 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 22198 | | 51.1 | 50.0 | 2.1 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 41652 | | 51.1 | 50.0 | 2.3 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 22002 | | 50.2 | 50.0 | 0.3 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 47250 | | 50.1 | 50.0 | 0.3 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 42658 | | 47.8 | 50.0 | -4.5 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 49222 | | 50.4 | 50.0 | 0.8 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 82053 | | 50.5 | 50.0 | 1.0 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 43236 | | 52.3 | 50.0 | 4.7 | 50.0 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/27/2017 12:19

Analysis Batch Number: 176352 End Date: 07/27/2017 13:28

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|-------------------|------------------|------------------|-----------------|-----------------------|-----------------------|
| CCVL 320-176352/3 | | 07/27/2017 12:19 | 1 | 2017.07.27A_004 .d | GeminiC18 3x100 3(mm) |
| CCV 320-176352/4 | | 07/27/2017 12:26 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 12:33 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 12:40 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 12:47 | 10 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 12:54 | 10 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 13:01 | 10 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 13:08 | 10 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 13:14 | 20 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 07/27/2017 13:21 | 10 | | GeminiC18 3x100 3(mm) |
| CCV 320-176352/13 | | 07/27/2017 13:28 | 1 | | GeminiC18 3x100 3(mm) |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-176352/3 Calibration Date: 07/27/2017 12:19
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27A_004.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9189 | | 1.04 | 1.00 | 4.2 | 50.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 0.9866 | | 0.947 | 1.00 | -5.3 | 50.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.471 | | 0.873 | 0.884 | -1.2 | 50.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9061 | | 0.952 | 1.00 | -4.8 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.076 | | 1.05 | 1.00 | 4.8 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 1.140 | | 0.959 | 0.910 | 5.3 | 50.0 |
| 6:2FTS | AveID | 0.8958 | 1.019 | | 1.08 | 0.948 | 13.8 | 50.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.047 | | 0.982 | 1.00 | -1.8 | 50.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.088 | | 0.924 | 0.952 | -3.0 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.018 | | 0.893 | 0.928 | -3.7 | 50.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9695 | | 0.952 | 1.00 | -4.8 | 50.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.8899 | | 0.987 | 1.00 | -1.3 | 50.0 |
| 8:2FTS | AveID | 0.9107 | 0.9055 | | 0.953 | 0.958 | -0.6 | 50.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9303 | | 0.949 | 1.00 | -5.1 | 50.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9218 | | 1.01 | 1.00 | 1.3 | 50.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6379 | | 0.988 | 0.964 | 2.5 | 50.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.9035 | | 1.06 | 1.00 | 6.4 | 50.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.106 | | 0.973 | 1.00 | -2.7 | 50.0 |
| MeFOSA | AveID | 0.9183 | 0.8647 | | 0.942 | 1.00 | -5.8 | 50.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9072 | | 0.978 | 1.00 | -2.2 | 50.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9660 | | 1.04 | 1.00 | 4.0 | 50.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8133 | | 0.955 | 1.00 | -4.5 | 50.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 2.181 | | 1.13 | 1.00 | 13.5 | 50.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 1.541 | | 1.28 | 1.00 | 28.0 | 50.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.8208 | | 1.07 | 1.00 | 7.3 | 50.0 |
| 13C4 PFBA | Ave | 156025 | 173504 | | 55.6 | 50.0 | 11.2 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 132018 | | 59.7 | 50.0 | 19.5 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 122309 | | 60.5 | 50.0 | 20.9 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 102447 | | 61.1 | 50.0 | 22.2 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 164725 | | 56.7 | 47.3 | 19.9 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 52803 | | 52.7 | 47.5 | 11.0 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-176352/3 Calibration Date: 07/27/2017 12:19
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27A_004.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 103057 | | 62.7 | 50.0 | 25.5 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 128541 | | 56.8 | 47.8 | 18.8 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 83946 | | 63.8 | 50.0 | 27.7 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 204146 | | 55.8 | 50.0 | 11.7 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 39801 | | 52.2 | 47.9 | 9.0 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 71465 | | 64.0 | 50.0 | 28.0 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 26356 | | 60.6 | 50.0 | 21.3 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 53492 | | 65.7 | 50.0 | 31.3 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 27109 | | 61.8 | 50.0 | 23.6 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 49445 | | 52.5 | 50.0 | 4.9 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 50845 | | 52.1 | 50.0 | 4.1 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 53658 | | 60.1 | 50.0 | 20.2 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 100679 | | 62.0 | 50.0 | 24.0 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 51220 | | 62.0 | 50.0 | 24.0 | 50.0 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/27/2017 20:48

Analysis Batch Number: 176487 End Date: 07/27/2017 22:25

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---------------------|------------------|------------------|-----------------|-------------------|-----------------------|
| CCV 320-176487/1 | | 07/27/2017 20:48 | 1 | 2017.07.27C_001.d | GeminiC18 3x100 3(mm) |
| MB 320-175742/1-A | | 07/27/2017 20:55 | 1 | 2017.07.27C_002.d | GeminiC18 3x100 3(mm) |
| LCS 320-175742/2-A | | 07/27/2017 21:02 | 1 | 2017.07.27C_003.d | GeminiC18 3x100 3(mm) |
| LCSD 320-175742/3-A | | 07/27/2017 21:09 | 1 | 2017.07.27C_004.d | GeminiC18 3x100 3(mm) |
| CCV 320-176487/12 | | 07/27/2017 22:04 | 1 | 2017.07.27C_012.d | GeminiC18 3x100 3(mm) |
| 320-29732-4 RE | | 07/27/2017 22:18 | 1 | 2017.07.27C_014.d | GeminiC18 3x100 3(mm) |
| CCV 320-176487/15 | | 07/27/2017 22:25 | 1 | 2017.07.27C_015.d | GeminiC18 3x100 3(mm) |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/1 Calibration Date: 07/27/2017 20:48
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9633 | | 21.8 | 20.0 | 9.2 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.025 | | 19.7 | 20.0 | -1.7 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.421 | | 16.9 | 17.7 | -4.6 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9720 | | 20.4 | 20.0 | 2.1 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9761 | | 19.0 | 20.0 | -4.9 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 0.9763 | | 16.4 | 18.2 | -9.8 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.9075 | | 19.2 | 19.0 | 1.3 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.037 | | 19.4 | 20.0 | -2.8 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.228 | | 20.8 | 19.0 | 9.5 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 1.000 | | 19.6 | 20.0 | -1.8 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.113 | | 19.5 | 18.6 | 5.3 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9620 | | 20.2 | 19.2 | 5.6 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9208 | | 20.4 | 20.0 | 2.1 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.8767 | | 17.9 | 20.0 | -10.5 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9031 | | 19.8 | 20.0 | -0.8 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6695 | | 20.7 | 19.3 | 7.6 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8705 | | 20.5 | 20.0 | 2.5 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.032 | | 20.0 | 20.0 | 0.1 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.9222 | | 20.1 | 20.0 | 0.4 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9201 | | 19.8 | 20.0 | -1.0 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9040 | | 19.5 | 20.0 | -2.5 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8849 | | 20.8 | 20.0 | 3.9 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.856 | | 19.3 | 20.0 | -3.4 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.9791 | | 24.1 | 20.0 | 20.3 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 1.044 | | 27.3 | 20.0 | 36.5* | 25.0 |
| 13C4 PFBA | Ave | 156025 | 189627 | | 60.8 | 50.0 | 21.5 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 137705 | | 62.3 | 50.0 | 24.6 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 125658 | | 62.1 | 50.0 | 24.2 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 111136 | | 66.3 | 50.0 | 32.6 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 161465 | | 55.6 | 47.3 | 17.5 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 62339 | | 62.3 | 47.5 | 31.1 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/1 Calibration Date: 07/27/2017 20:48
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_001.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 102008 | | 62.1 | 50.0 | 24.2 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 110913 | | 49.0 | 47.8 | 2.5 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 78128 | | 59.4 | 50.0 | 18.8 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 193177 | | 52.8 | 50.0 | 5.7 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 48887 | | 64.2 | 47.9 | 33.9 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 72114 | | 64.6 | 50.0 | 29.2 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 25607 | | 58.9 | 50.0 | 17.8 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 25970 | | 59.2 | 50.0 | 18.4 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 49147 | | 60.3 | 50.0 | 20.7 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 48915 | | 51.9 | 50.0 | 3.8 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 50771 | | 56.8 | 50.0 | 13.7 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 52382 | | 53.6 | 50.0 | 7.3 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 90271 | | 55.6 | 50.0 | 11.1 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 56162 | | 68.0 | 50.0 | 36.0 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/12 Calibration Date: 07/27/2017 22:04
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9072 | | 51.4 | 50.0 | 2.9 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 0.9625 | | 46.2 | 50.0 | -7.6 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.409 | | 41.8 | 44.2 | -5.4 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9321 | | 48.9 | 50.0 | -2.1 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 0.9586 | | 46.7 | 50.0 | -6.6 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 0.9797 | | 41.2 | 45.5 | -9.4 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8372 | | 44.3 | 47.4 | -6.5 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.047 | | 49.1 | 50.0 | -1.8 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.132 | | 48.0 | 47.6 | 0.9 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.996 | | 48.9 | 50.0 | -2.2 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 0.9886 | | 43.4 | 46.4 | -6.5 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.8990 | | 47.3 | 47.9 | -1.3 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.8953 | | 49.6 | 50.0 | -0.7 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.8951 | | 45.7 | 50.0 | -8.6 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.8872 | | 48.7 | 50.0 | -2.5 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6080 | | 47.1 | 48.2 | -2.3 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8020 | | 47.2 | 50.0 | -5.5 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 0.9802 | | 47.7 | 50.0 | -4.6 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.8862 | | 48.2 | 50.0 | -3.5 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9512 | | 51.2 | 50.0 | 2.4 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9042 | | 48.8 | 50.0 | -2.5 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.9157 | | 53.8 | 50.0 | 7.6 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.898 | | 49.4 | 50.0 | -1.2 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.999 | | 62.4 | 50.0 | 24.8 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 1.014 | | 66.3 | 50.0 | 32.5* | 25.0 |
| 13C4 PFBA | Ave | 156025 | 179234 | | 57.4 | 50.0 | 14.9 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 135283 | | 61.2 | 50.0 | 22.4 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 120814 | | 59.7 | 50.0 | 19.4 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 111594 | | 66.6 | 50.0 | 33.1 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 160556 | | 55.3 | 47.3 | 16.8 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 57534 | | 57.5 | 47.5 | 21.0 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/12 Calibration Date: 07/27/2017 22:04
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_012.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 97244 | | 59.2 | 50.0 | 18.4 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 118951 | | 52.5 | 47.8 | 9.9 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 73728 | | 56.1 | 50.0 | 12.2 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 193888 | | 53.0 | 50.0 | 6.1 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 41121 | | 54.0 | 47.9 | 12.7 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 68227 | | 61.1 | 50.0 | 22.2 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 24675 | | 56.8 | 50.0 | 13.5 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 26593 | | 60.6 | 50.0 | 21.3 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 47865 | | 58.8 | 50.0 | 17.5 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 50676 | | 53.8 | 50.0 | 7.6 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 43800 | | 49.0 | 50.0 | -1.9 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 52177 | | 53.4 | 50.0 | 6.8 | 50.0 |
| 13C2-PFTEtDA | Ave | 81216 | 87657 | | 54.0 | 50.0 | 7.9 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 47512 | | 57.5 | 50.0 | 15.0 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/15 Calibration Date: 07/27/2017 22:25
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_015.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanoic acid (PFBA) | AveID | 0.8820 | 0.9649 | | 21.9 | 20.0 | 9.4 | 25.0 |
| Perfluoropentanoic acid (PFPeA) | AveID | 1.042 | 1.041 | | 20.0 | 20.0 | -0.1 | 25.0 |
| Perfluorobutanesulfonic acid (PFBS) | AveID | 1.489 | 1.545 | | 18.3 | 17.7 | 3.7 | 25.0 |
| Perfluorohexanoic acid (PFHxA) | AveID | 0.9521 | 0.9278 | | 19.5 | 20.0 | -2.6 | 25.0 |
| Perfluoroheptanoic acid (PFHpA) | AveID | 1.026 | 1.007 | | 19.6 | 20.0 | -1.9 | 25.0 |
| Perfluorohexanesulfonic acid (PFHxS) | AveID | 1.082 | 0.9914 | | 16.7 | 18.2 | -8.4 | 25.0 |
| 6:2FTS | AveID | 0.8958 | 0.8626 | | 18.3 | 19.0 | -3.7 | 25.0 |
| Perfluoroheptanesulfonic Acid (PFHpS) | AveID | 1.122 | 1.240 | | 21.0 | 19.0 | 10.5 | 25.0 |
| Perfluorooctanoic acid (PFOA) | AveID | 1.067 | 1.052 | | 19.7 | 20.0 | -1.4 | 25.0 |
| Perfluorononanoic acid (PFNA) | AveID | 1.018 | 0.9756 | | 19.2 | 20.0 | -4.2 | 25.0 |
| Perfluorooctanesulfonic acid (PFOS) | AveID | 1.057 | 1.052 | | 18.5 | 18.6 | -0.5 | 25.0 |
| 8:2FTS | AveID | 0.9107 | 0.9022 | | 19.0 | 19.2 | -0.9 | 25.0 |
| Perfluorooctane Sulfonamide (FOSA) | AveID | 0.9018 | 0.9255 | | 20.5 | 20.0 | 2.6 | 25.0 |
| Perfluorodecanoic acid (PFDA) | AveID | 0.9799 | 0.9566 | | 19.5 | 20.0 | -2.4 | 25.0 |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | AveID | 0.9100 | 0.9192 | | 20.2 | 20.0 | 1.0 | 25.0 |
| Perfluorodecanesulfonic acid (PFDS) | AveID | 0.6225 | 0.6224 | | 19.3 | 19.3 | -0.0 | 25.0 |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | AveID | 0.8488 | 0.8608 | | 20.3 | 20.0 | 1.4 | 25.0 |
| Perfluoroundecanoic acid (PFUnA) | L2ID | | 1.088 | | 21.1 | 20.0 | 5.6 | 25.0 |
| MeFOSA | AveID | 0.9183 | 0.9093 | | 19.8 | 20.0 | -1.0 | 25.0 |
| Perfluorododecanoic acid (PFDoA) | AveID | 0.9292 | 0.9671 | | 20.8 | 20.0 | 4.1 | 25.0 |
| N-EtFOSA-M | AveID | 0.9274 | 0.9434 | | 20.3 | 20.0 | 1.7 | 25.0 |
| Perfluorotridecanoic Acid (PFTriA) | AveID | 0.8514 | 0.8846 | | 20.8 | 20.0 | 3.9 | 25.0 |
| Perfluorotetradecanoic acid (PFTeA) | AveID | 1.922 | 1.824 | | 19.0 | 20.0 | -5.1 | 25.0 |
| Perfluoro-n-hexadecanoic acid (PFHxDA) | L2ID | | 0.9356 | | 23.0 | 20.0 | 14.9 | 25.0 |
| Perfluoro-n-octadecanoic acid (PFODA) | AveID | 0.7652 | 0.9256 | | 24.2 | 20.0 | 21.0 | 25.0 |
| 13C4 PFBA | Ave | 156025 | 204655 | | 65.6 | 50.0 | 31.2 | 50.0 |
| 13C5 PFPeA | Ave | 110496 | 147166 | | 66.6 | 50.0 | 33.2 | 50.0 |
| 13C2 PFHxA | Ave | 101156 | 140270 | | 69.3 | 50.0 | 38.7 | 50.0 |
| 13C4-PFHpA | Ave | 83824 | 125528 | | 74.9 | 50.0 | 49.8 | 50.0 |
| 18O2 PFHxS | Ave | 137438 | 184352 | | 63.4 | 47.3 | 34.1 | 50.0 |
| M2-6:2FTS | Ave | 47560 | 63655 | | 63.6 | 47.5 | 33.8 | 50.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1
 SDG No.: _____
 Lab Sample ID: CCV 320-176487/15 Calibration Date: 07/27/2017 22:25
 Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58
 Lab File ID: 2017.07.27C_015.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------|------------|--------|--------|--------|-------------|--------------|------|--------|
| 13C4 PFOA | Ave | 82143 | 110027 | | 67.0 | 50.0 | 33.9 | 50.0 |
| 13C4 PFOS | Ave | 108200 | 128018 | | 56.6 | 47.8 | 18.3 | 50.0 |
| 13C5 PFNA | Ave | 65740 | 85832 | | 65.3 | 50.0 | 30.6 | 50.0 |
| 13C8 FOSA | Ave | 182802 | 213697 | | 58.5 | 50.0 | 16.9 | 50.0 |
| M2-8:2FTS | Ave | 36500 | 46996 | | 61.7 | 47.9 | 28.8 | 50.0 |
| 13C2 PFDA | Ave | 55836 | 71382 | | 63.9 | 50.0 | 27.8 | 50.0 |
| d3-NMeFOSAA | Ave | 21732 | 28005 | | 64.4 | 50.0 | 28.9 | 50.0 |
| 13C2 PFUnA | Ave | 40729 | 50596 | | 62.1 | 50.0 | 24.2 | 50.0 |
| d5-NEtFOSAA | Ave | 21931 | 28897 | | 65.9 | 50.0 | 31.8 | 50.0 |
| d-N-MeFOSA-M | Ave | 47115 | 54532 | | 57.9 | 50.0 | 15.7 | 50.0 |
| 13C2 PFDoA | Ave | 44655 | 51382 | | 57.5 | 50.0 | 15.1 | 50.0 |
| d-N-EtFOSA-M | Ave | 48834 | 56408 | | 57.8 | 50.0 | 15.5 | 50.0 |
| 13C2-PFTeDA | Ave | 81216 | 97684 | | 60.1 | 50.0 | 20.3 | 50.0 |
| 13C2-PFHxDA | Ave | 41307 | 49721 | | 60.2 | 50.0 | 20.4 | 50.0 |

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 174599 Batch Start Date: 07/18/17 07:22 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/20/17 21:40

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | LCMPFCSU 00081 | LCPFCSU 00100 |
|----------------------|------------------|-------------------------|-------|-------------|------------|---------------|-------------|----------------|---------------|
| MB 320-174599/1 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | |
| LCS 320-174599/2 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | 500 uL |
| LCSD 320-174599/3 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-A-4 | TP-PFC-019-TPE-D | 3535, 537 (Modified) | T | 285.36 g | 26.98 g | 258.4 mL | 0.50 mL | 500 uL | |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | AnalysisComment | | | | | |
|----------------------|------------------|-------------------------|-------|---------------------------------|--|--|--|--|--|
| MB 320-174599/1 | | 3535, 537 (Modified) | | Time off the N-evap: 7:48 pm | | | | | |
| LCS 320-174599/2 | | 3535, 537 (Modified) | | Time off the N-evap: 7:30 pm | | | | | |
| LCSD 320-174599/3 | | 3535, 537 (Modified) | | Time off the N-evap: 7:15 pm | | | | | |
| 320-29732-A-4 | TP-PFC-019-TPE-D | 3535, 537 (Modified) | T | Time off the N-evap: 7:00 pm | | | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 174599 Batch Start Date: 07/18/17 07:22 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/20/17 21:40

| Batch Notes | |
|--------------------------------------|-----------------|
| Balance ID | QA-070 |
| H2O ID | 7/17/17 |
| Hexane ID | 958899 |
| Manifold ID | 12,13 |
| Methanol ID | 973171 |
| Sodium Hydroxide ID | 966118 |
| Pipette ID | N32728F |
| Analyst ID - Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop Witness | NSH |
| Solvent Lot # | 976948 |
| Solvent Name | 0.3% NH4OH/MeOH |
| SOP Number | WS-LC-0025 |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003036333A |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 175074 Batch Start Date: 07/20/17 09:14 Batch Analyst: Santos, Jonathan

Batch Method: 3535 Batch End Date: 07/24/17 22:05

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | LCMPFCSU 00081 | LCPFCSU 00100 |
|-------------------|------------------------|----------------------|-------|-------------|------------|---------------|-------------|----------------|---------------|
| MB 320-175074/1 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | |
| LCS 320-175074/2 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | 500 uL |
| LCSD 320-175074/3 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-A-1 | TP-PFC-019-TPI | 3535, 537 (Modified) | T | 284.68 g | 26.67 g | 258 mL | 0.50 mL | 500 uL | |
| 320-29732-A-2 | TP-PFC-019-MID-C ARBON | 3535, 537 (Modified) | T | 279.04 g | 27.01 g | 252 mL | 0.50 mL | 500 uL | |
| 320-29732-A-3 | TP-PFC-019-TPE | 3535, 537 (Modified) | T | 281.97 g | 27.36 g | 254.6 mL | 0.50 mL | 500 uL | |

| Batch Notes | |
|--------------------------------------|-----------------|
| Balance ID | QA-070 |
| H2O ID | 7/17/17 |
| Hexane ID | 958901 |
| Manifold ID | 2, 8 |
| Methanol ID | 983105 |
| Sodium Hydroxide ID | 988541 |
| Pipette ID | N32728F |
| Analyst ID - Reagent Drop | HJA |
| Analyst ID - SU Reagent Drop | HJA |
| Analyst ID - SU Reagent Drop Witness | JNS |
| Solvent Lot # | 987338 |
| Solvent Name | 0.3% NH4OH/MeOH |
| SOP Number | WS-LC-0025 |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003036333A |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 175097 Batch Start Date: 07/20/17 10:13 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/22/17 12:30

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | LCMPFC2SU 00025 | LCMPFCSU 00081 |
|----------------------|---------------------------|-------------------------|-------|-------------|------------|---------------|-------------|-----------------|----------------|
| MB 320-175097/1 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | 500 uL |
| LCS 320-175097/2 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | 500 uL |
| LCSD 320-175097/3 | | 3535, 537 (Modified) | | | | 250 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-C-1 | TP-PFC-019-TPI | 3535, 537 (Modified) | T | 283.61 g | 27.32 g | 256.3 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-C-2 | TP-PFC-019-MID-C ARBON | 3535, 537 (Modified) | T | 278.12 g | 27.30 g | 250.8 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-C-3 | TP-PFC-019-TPE | 3535, 537 (Modified) | T | 286.52 g | 26.98 g | 259.5 mL | 0.50 mL | 500 uL | 500 uL |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LCPFC2SP 00032 | LCPFCSP 00100 | AnalysisComment | | | |
|----------------------|---------------------------|-------------------------|-------|----------------|---------------|------------------------------------|--|--|--|
| MB 320-175097/1 | | 3535, 537 (Modified) | | | | | | | |
| LCS 320-175097/2 | | 3535, 537 (Modified) | | 500 uL | 500 uL | | | | |
| LCSD 320-175097/3 | | 3535, 537 (Modified) | | 500 uL | 500 uL | | | | |
| 320-29732-C-1 | TP-PFC-019-TPI | 3535, 537 (Modified) | T | | | | | | |
| 320-29732-C-2 | TP-PFC-019-MID-C ARBON | 3535, 537 (Modified) | T | | | Milky white samples after FV | | | |
| 320-29732-C-3 | TP-PFC-019-TPE | 3535, 537 (Modified) | T | | | Milky white samples after FV | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 175097 Batch Start Date: 07/20/17 10:13 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/22/17 12:30

| Batch Notes | |
|--------------------------------------|-----------------|
| Balance ID | QA-070 |
| H2O ID | 7/17/17 |
| Hexane ID | 981623 |
| Manifold ID | 13,14 |
| Methanol ID | 983105 |
| Sodium Hydroxide ID | 988541 |
| Pipette ID | N32728F |
| Analyst ID - Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop Witness | NSH |
| Solvent Lot # | 987338 |
| Solvent Name | 0.3% NH4OH/MeOH |
| SOP Number | WS-LC-0025 |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003036333A |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.: _____

Batch Number: 175742 Batch Start Date: 07/25/17 09:11 Batch Analyst: Santos, Jonathan

Batch Method: 3535 Batch End Date: 07/27/17 14:07

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | LCMPFC_ALL_SU 00004 | LCPFCSF 00110 |
|----------------------|------------------|-------------------------|-------|-------------|------------|---------------|-------------|------------------------|---------------|
| MB 320-175742/1 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | |
| LCS 320-175742/2 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | 500 uL |
| LCSD 320-175742/3 | | 3535, 537 (Modified) | | | | 250.00 mL | 0.50 mL | 500 uL | 500 uL |
| 320-29732-C-4 | TP-PFC-019-TPE-D | 3535, 537 (Modified) | T | 272.84 g | 27.30 g | 245.5 mL | 0.50 mL | 500 uL | |

| Batch Notes | |
|--------------------------------------|-----------------|
| Balance ID | QA-070 |
| H2O ID | 7/21/17 |
| Hexane ID | 981625 |
| Manifold ID | 2, 8 |
| Methanol ID | 988835 |
| Sodium Hydroxide ID | 988541 |
| Pipette ID | MD05306 |
| Analyst ID - Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop Witness | JNS |
| Solvent Lot # | 987338 |
| Solvent Name | 0.3% NH4OH/MeOH |
| SOP Number | WS-LC-0025 |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003237040A |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

02 RX~FOSA

Aqueous Extraction Analysis Sheet

AB 7/21/17

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/20/2017 9:40:00PM

Solid-Phase Extraction (SPE)

| Input Sample Lab ID (Analytical Method) | SDG (Job #) | GrossWt TareWt | InitAmnt FinAmnt | Rcvd | PHs Adj1 Adj2 | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|--|----------------------|-------------------|---------------------|------|------------------|----------|-------------------|-------------|---|----------------------|
| 1 MB-320-174599/1 N/A | N/A | | 250 mL | | | N/A | N/A | N/A | Time off the N-evap: 7:48 pm <i>RE DO SDC 7/25/17</i> | |
| | | | 0.50 mL | | | | | | | |
| 2 LCS-320-174599/2 N/A | N/A | | 250 mL | | | N/A | N/A | N/A | Time off the N-evap: 7:30 pm <i>RE</i> | |
| | | | 0.50 mL | | | | | | | |
| 3 LCSD-320-174599/3 N/A | N/A | | 250 mL | | | N/A | N/A | N/A | Time off the N-evap: 7:15 pm <i>RE</i> | |
| | | | 0.50 mL | | | | | | | |
| 4 320-29732-A-4 (PFC_IDA_DOD5) | N/A (320-29732-1) | 285.36 g | 258.4 mL | | | 7/23/17 | 16_Days | 4 | Time off the N-evap: 7:00 pm | |
| | | 26.98 g | 0.50 mL | | | | | | | |
| 5 160-23181-A-1 (PFC_IDA) | N/A (160-23181-1) | 286.70 g | 258.6 mL | | | 7/25/17 | 12_Days | 4 | Time off the N-evap: 8:00 pm (Cloudy yellow sample) | |
| | | 28.09 g | 0.50 mL | | | | | | | |
| 6 160-23181-A-2 (PFC_IDA) | N/A (160-23181-1) | 279.64 g | 252.1 mL | | | 7/25/17 | 12_Days | 4 | Time off the N-evap: 6:00 pm | |
| | | 27.57 g | 0.50 mL | | | | | | | |
| 7 320-29816-A-1 (PFC_IDA) | N/A (320-29816-1) | 279.11 g | 252.2 mL | | | 7/28/17 | 12_Days | 4 | Time off the N-evap: 8:26 pm | |
| | | 26.94 g | 0.50 mL | | | | | | | |
| 8 320-29816-A-2 (PFC_IDA) | N/A (320-29816-1) | 285.52 g | 257.2 mL | | | 7/28/17 | 12_Days | 4 | Time off the N-evap: 6:48 pm | |
| | | 28.32 g | 0.50 mL | | | | | | | |

Page 1 of 5 of 1104

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)










Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/20/2017 9:40:00PM

| | | | | | | | | | | | | |
|----|-------------------------------------|---|----------|----------|--|--|--|---------|---------|---|---|---|
| 9 | 320-29409-B-1 (PFC_IDA_DOD5) | N/A (320-29409-1) | 285.61 g | 257.7 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 6:40 pm (Cloudy white) |  |
| | | | 27.93 g | 0.50 mL | | | | | | | | |
| 10 | 320-29409-B-2 (PFC_IDA_DOD5) | N/A (320-29409-1) | 281.00 g | 253 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 6:40 pm (Cloudy white) |  |
| | | | 28.03 g | 0.50 mL | | | | | | | | |
| 11 | 320-29409-B-4 (PFC_IDA_DOD5) | N/A (320-29409-1) | 293.27 g | 266 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 7:00 pm (Cloudy white) |  |
| | | | 27.25 g | 0.50 mL | | | | | | | | |
| 12 | 320-29409-B-4-MS (PFC_IDA_DOD5) | N/A (320-29409-1) | 280.54 g | 253.3 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 5:36 pm 1st one to come off |  |
| | | | 27.28 g | 0.50 mL | | | | | | | | |
| 13 | 320-29409-B-4-MSD (PFC_IDA_DOD5) | N/A (320-29409-1) | 272.30 g | 245.4 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 7:30 pm (Cloudy white) |  |
| | | | 26.89 g | 0.50 mL | | | | | | | | |
| 14 | 320-29713-A-1 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 264.12 g | 236.4 mL | | | | 7/25/17 | 12_Days | 2 | Time off the N-evap: 8:26 pm |  |
| | | | 27.74 g | 0.50 mL | | | | | | | | |
| 15 | 320-29713-A-2 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 280.48 g | 252.6 mL | | | | 7/25/17 | 12_Days | 2 | Time off the N-evap: 8:00 pm |  |
| | | | 27.90 g | 0.50 mL | | | | | | | | |
| 16 | 320-29713-A-3 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 274.81 g | 247.3 mL | | | | 7/25/17 | 12_Days | 2 | Time off the N-evap: 7:48 pm |  |
| | | | 27.50 g | 0.50 mL | | | | | | | 5x | |
| 17 | 320-29409-B-3 (PFC_IDA_DOD5) | N/A (320-29409-1) | 290.75 g | 263.2 mL | | | | 7/7/17 | 8_Days | 4 | Time off the N-evap: 6:48 pm (Cloudy white) |  |
| | | | 27.55 g | 0.50 mL | | | | | | | | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/20/17 2:40

Rx
MM 7/20/17
TO SA

Solid-Phase Extraction (SPE)

| Input Sample Lab ID (Analytical Method) | SDG (Job #) | GrossWt TareWt | InitAmnt FinAmnt | PHs Rcvd | Adj1 | Adj2 | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|--|----------------------|-------------------|---------------------|-------------|------|------|----------|-------------------|-------------|------------------------------|----------------------|
| 1 MB-320-174599/1 N/A | N/A | | 250 mL | | | | N/A | N/A | N/A | PORT 1 7:48 | MB 320-174599/1-A |
| | | | 0.50 mL | | | | | | | | |
| 2 LCS-320-174599/2 N/A | N/A | | 250 mL | | | | N/A | N/A | N/A | PORT 2 7:30 | LCS 320-174599/2-A |
| | | | 0.50 mL | | | | | | | | |
| 3 LCSD-320-174599/3 N/A | N/A | | 250 mL | | | | N/A | N/A | N/A | PORT 3 7:15 | LCSD 320-174599/3-A |
| | | | 0.50 mL | | | | | | | | |
| 4 320-29732-A-4 (PFC_IDA_DOD5) | N/A (320-29732-1) | 285.36 g | 258.4 mL | | | | 7/23/17 | 16_Days | 4 | PORT 4 7:00 PM | 320-29732-A-4-A |
| | | 26.98 g | 0.50 mL | | | | | | | | |
| 5 160-23181-A-1 (PFC_IDA) | N/A (160-23181-1) | 286.70 g | 258.6 mL | | | | 7/25/17 | 12_Days | 4 | PORT 5 8:00 cloudy yellow | 160-23181-A-1-A |
| | | 28.09 g | 0.50 mL | | | | | | | | |
| 6 160-23181-A-2 (PFC_IDA) | N/A (160-23181-1) | 279.64 g | 252.1 mL | | | | 7/25/17 | 12_Days | 4 | PORT 6 (LPM) | 160-23181-A-2-B |
| | | 27.57 g | 0.50 mL | | | | | | | | |
| 7 320-29816-A-1 (PFC_IDA) | N/A (320-29816-1) | 279.11 g | 252.2 mL | | | | 7/28/17 | 12_Days | 4 | PORT 7 8:24 | 320-29816-A-1-B |
| | | 26.94 g | 0.50 mL | | | | | | | | |
| 8 320-29816-A-2 (PFC_IDA) | N/A (320-29816-1) | 285.52 g | 257.2 mL | | | | 7/28/17 | 12_Days | 4 | PORT 8 6:48 | 320-29816-A-2-B |
| | | 28.32 g | 0.50 mL | | | | | | | | |
| 9 320-29409-B-1 (PFC_IDA_DOD5) | N/A (320-29409-1) | 285.61 g | 257.7 mL | | | | 7/7/17 | 8_Days | 4 | PORT 9 6:40 milky white | 320-29409-B-1-B |
| | | 27.93 g | 0.50 mL | | | | | | | | |
| 10 320-29409-B-2 (PFC_IDA_DOD5) | N/A (320-29409-1) | 281.00 g | 253 mL | | | | 7/7/17 | 8_Days | 4 | PORT 10 6:40 milky white | 320-29409-B-2-B |
| | | 28.03 g | 0.50 mL | | | | | | | | |

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)









Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End:

| | | | | | | | | | | | |
|----|-------------------------------------|---|----------|----------|--|-----|---------|---------|---|---|---|
| 11 | 320-29409-B-4 (PFC_IDA_DOD5) | N/A (320-29409-1) | 293.27 g | 266 mL | | | 7/7/17 | 8_Days | 4 | PDA 11 7:00 pm murky white |  |
| | | | 27.25 g | 0.50 mL | | | | | | | |
| 12 | 320-29409-B-4-MS (PFC_IDA_DOD5) | N/A (320-29409-1) | 280.54 g | 253.3 mL | | | 7/7/17 | 8_Days | 4 | PDA 12 (1 stone to come off 6:30) cloudy white |  |
| | | | 27.28 g | 0.50 mL | | | | | | | |
| 13 | 320-29409-B-4-MSD (PFC_IDA_DOD5) | N/A (320-29409-1) | 272.30 g | 245.4 mL | | | 7/7/17 | 8_Days | 4 | PDA 13 7:30 cloudy white |  |
| | | | 26.89 g | 0.50 mL | | | | | | | |
| 14 | 320-29713-A-1 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 264.12 g | 236.4 mL | | | 7/25/17 | 12_Days | 2 | PDA 14 8:24 |  |
| | | | 27.74 g | 0.50 mL | | | | | | | |
| 15 | 320-29713-A-2 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 280.48 g | 252.6 mL | | | 7/25/17 | 12_Days | 2 | PDA 15 8:00 |  |
| | | | 27.90 g | 0.50 mL | | | | | | | |
| 16 | 320-29713-A-3 (PFC_IDA) | Saint Gobain-Pipe Cleaning Activities (320-29713-1) | 274.81 g | 247.3 mL | | | 7/25/17 | 12_Days | 2 | PDA 16 6:48 cloudy white |  |
| | | | 27.50 g | 0.50 mL | | | | | | | |
| 17 | 320-29409-B-3 (PFC_IDA_DOD5) | N/A (320-29409-1) | 290.75 g | 263.2 mL | | | 7/7/17 | 8_Days | 4 | PDA 17 7:48 |  |
| | | | 27.55 g | 0.50 mL | | | | | | | |
| 18 | 320-29409-B-5 (PFC_IDA_DOD5) | N/A (320-29409-1) | 286.94 g | 260 mL | | | 7/7/17 | 8_Days | 4 | PDA 18 6:08 pm RI IDAs |  |
| | | | 26.97 g | 0.50 mL | | | | | | | |
| 19 | N/A | N/A | | | | N/A | N/A | N/A | | PDA 19 | |
| 20 | N/A | N/A | | | | N/A | N/A | N/A | | PDA 20 | |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Notes

| | |
|--------------------------------|-----------------|
| Manifold ID | 12,13 |
| Methanol ID | 973171 |
| Hexane ID | 958899 |
| Sodium Hydroxide ID | 966118 |
| First Start time | NA |
| First End time | NA |
| SPE Cartridge Type | WAX 500mg |
| Solid Phase Extraction Disk ID | 003036333A |
| Balance ID | QA-070 |
| H2O ID | 7/17/17 |
| Pipette ID | N32728F |
| Solvent Name | 0.3% NH4OH/MeOH |
| Solvent Lot # | 976948 |
| Analyst ID - Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop | CCB |
| Analyst ID - SU Reagent Drop | NSH |
| Witness | |
| Acid Name | NA |
| Acid ID | NA |
| Reagent ID | NA |
| Reagent Lot Number | NA |
| SOP Number | WS-LC-0025 |

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Comment

Comments

320-29409-B-1

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-2

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-4

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-4~MS

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-4~MSD

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-3

Rework Comments: Low 13C8 FOSA recoveries.

320-29409-B-5

Rework Comments: Low 13C8 FOSA recovery.

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| DODCMD_ID | INSTALLATION_ID | SDG | SITE_NAME | NORM_SITE_NAME | LOCATION_NAME | LOCATION_TYPE_DESC | COORD_X | COORD_Y | CONTRACT_ID | DO_CTO_NUMBER | CONTR_NAME | SAMPLE_NAME | SAMPLE_MATRIX_DESC | SAMPLE_TYPE_DESC | COLLECT_DATE | ANALYTICAL_METHOD | ANALYTICAL_METHOD_GRP_DESC |
|--------------|-----------------|-------------|------------|----------------|-----------------|--------------------|------------|------------|---------------|---------------|------------------|-----------------------|--------------------|------------------|--------------|-------------------|----------------------------|
| MID_ATLANTIC | BRUNSWICK_NAS | 320-29732-1 | SITE 00011 | SITE 00011 | TP-PFC-EFFLUENT | Monitoring well | 3015831.52 | 384866.155 | N6247016D9008 | WE21 | TETRA TECH, INC. | TP-PFC-019-TPE | Ground water | Normal (Regular) | 6-Jul-17 | 537 | Perfluoroalkyl Compounds |
| MID_ATLANTIC | BRUNSWICK_NAS | 320-29732-1 | SITE 00011 | SITE 00011 | TP-PFC-EFFLUENT | Monitoring well | 3015831.52 | 384866.155 | N6247016D9008 | WE21 | TETRA TECH, INC. | TP-PFC-019-TPE-D | Ground water | Field duplicate | 6-Jul-17 | 537 | Perfluoroalkyl Compounds |
| MID_ATLANTIC | BRUNSWICK_NAS | 320-29732-1 | SITE 00011 | SITE 00011 | TP-PFC-INFLUENT | Monitoring well | 3015831.52 | 384866.155 | N6247016D9008 | WE21 | TETRA TECH, INC. | TP-PFC-019-TPI | Ground water | Normal (Regular) | 6-Jul-17 | 537 | Perfluoroalkyl Compounds |
| MID_ATLANTIC | BRUNSWICK_NAS | 320-29732-1 | SITE 00011 | SITE 00011 | TP-PFC-MIDPOINT | Monitoring well | 3015831.52 | 384866.155 | N6247016D9008 | WE21 | TETRA TECH, INC. | TP-PFC-019-MID-CARBON | Ground water | Normal (Regular) | 6-Jul-17 | 537 | Perfluoroalkyl Compounds |